



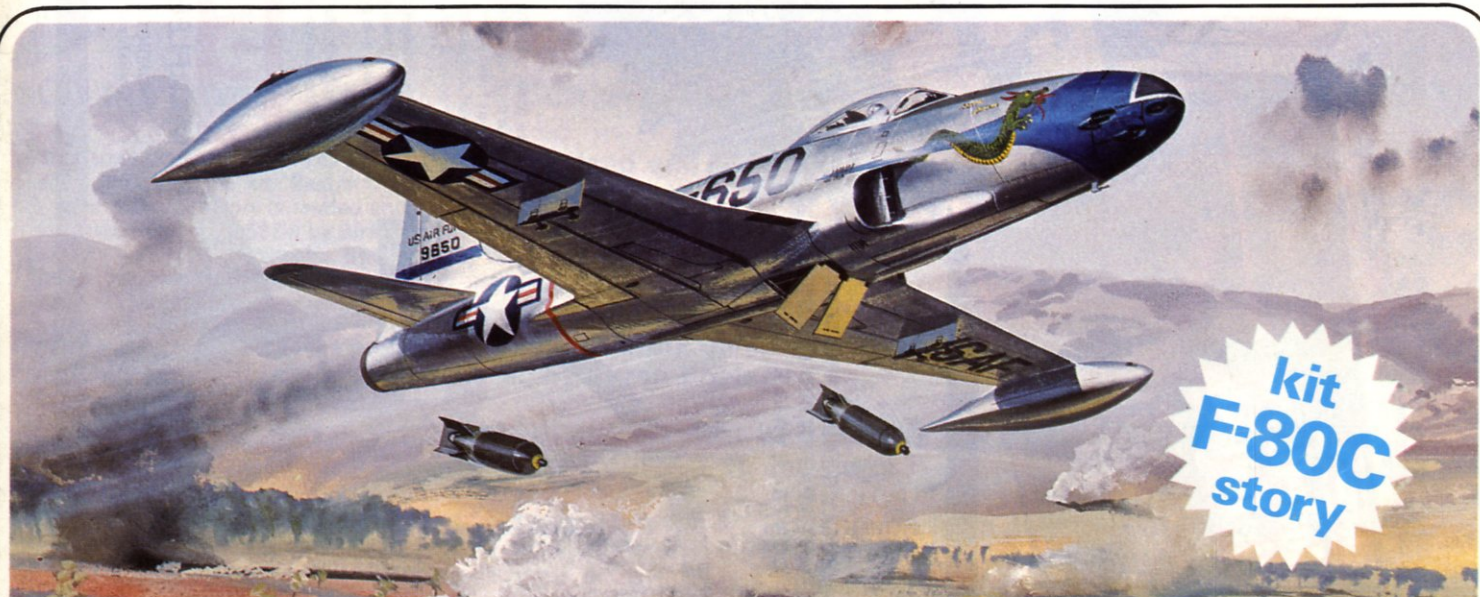
574 TSR-2

June 1976 30p

AIRFIX

magazine for plastic modellers

Inside: Centurion Mk V conversion, 20 mm Oerlikon details, Hotspur glider and Southern Militaire report



Star feature — scratch-build a 1:72 TSR 2!

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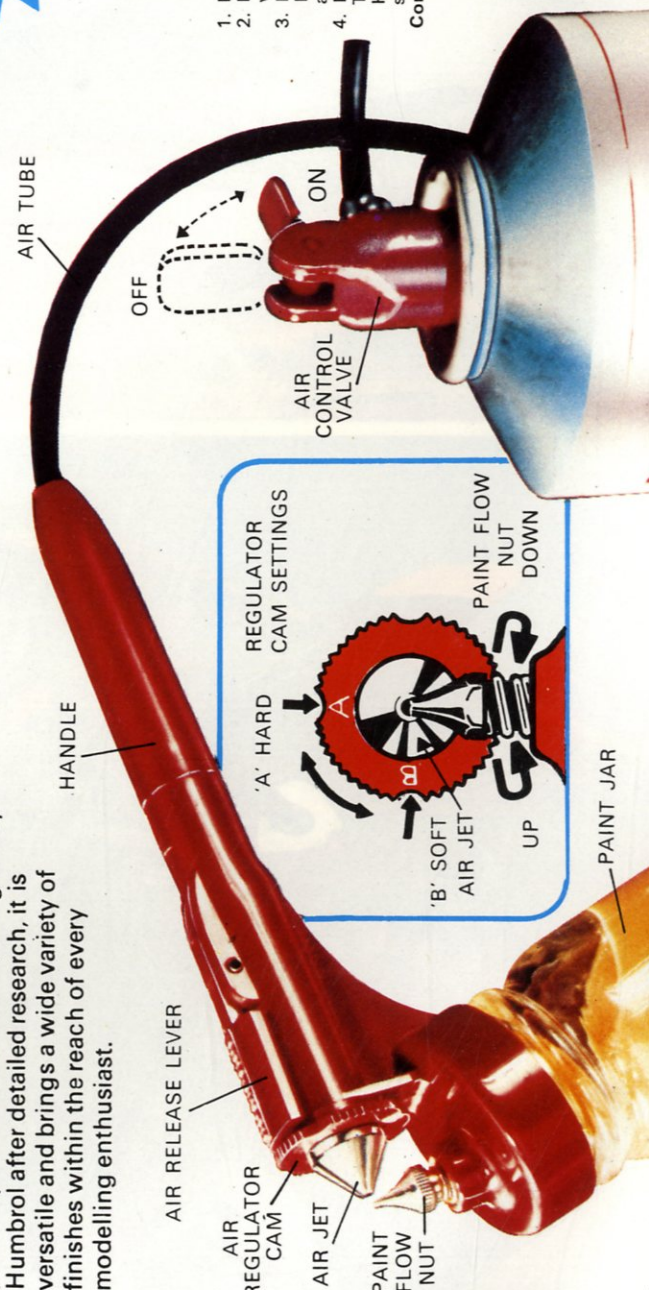
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AIRFIX magazine for plastic modellers

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On the cover

Top Box artwork from Airfix's recent 1:72 scale Shooting Star kit, 'Saggin Dragon', whose real-life history is related and illustrated on pages 587-8 by Airfix's chief kit researcher, Barry Wheeler. **Bottom** Fine photograph from Martin Windrow of Airfix's 1:24 scale Messerschmitt Bf 109 constructed according to the super-detailing instructions in PSL's book *Classic Aircraft No 2: Messerschmitt Bf 109* (see page 585) by Martin's brother, Richard. The diorama, which is completed by some specially designed figures made by Pat Bird of Series 77, depicts a lunch break by groundcrew of 6 Staffel/JG 51 at Wissant in August 1940. They are working on 109E Werke Nr 5587, flown by Oberfeldwebel Fritz Beek until he was forced down by failing oil pressure on August 24 near St Margaret's Bay, Kent. This diorama is one of the many fascinating exhibits in the privately owned Battle of Britain Museum at Chilham Castle, Kent, which can be visited on any summer Tuesday, Wednesday, Thursday, Saturday or Sunday afternoon, admission free (although there is a small charge for admission to the castle itself).

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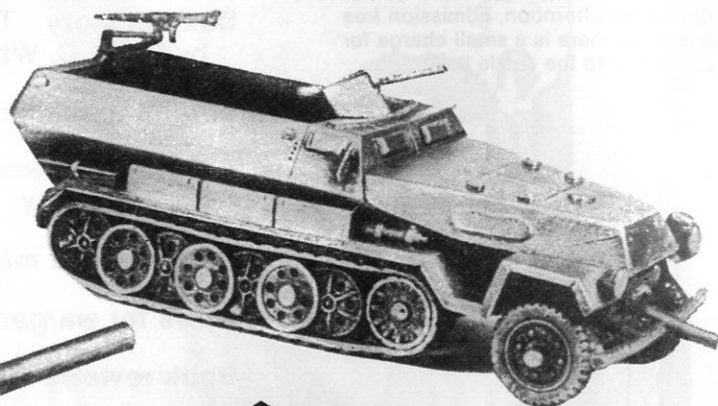
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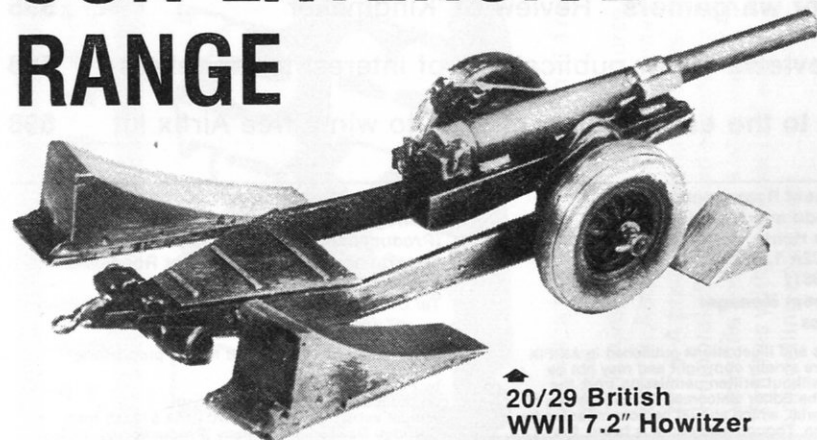
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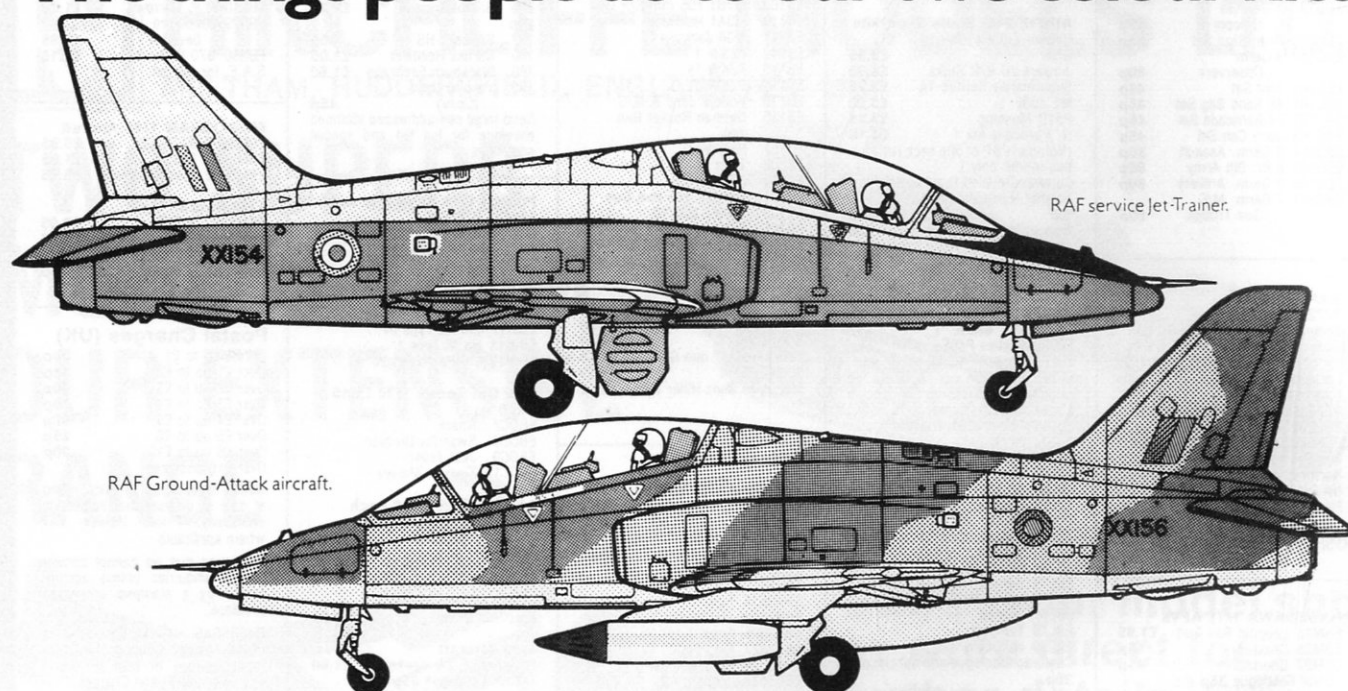
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T-55 mine clearer	M163 Vulcan	FV438 Swingfire	EBR-75
T-10M	M114	Abbot	AMX-30 155 howitzer
PT-76	M109	Saladin	AMX-10
BTR-60PB	M728 CEV	Saracen	AMX-30 with Roland
BRDM-2	Commando	Fox	AMX-10 with HOT
BRDM-2 with sagger	XR311	Ferret 2/6	Jeep with Entac
ASU-85	M41 Walker Bulldog	Scorpion	AMX-13 + HOT
UAZ-469	M42 Duster	Scimitar	
BM 21 rocket launcher	M60 dozer	Striker	
ZSU-23-4	M113 + recoilless	Rapier	
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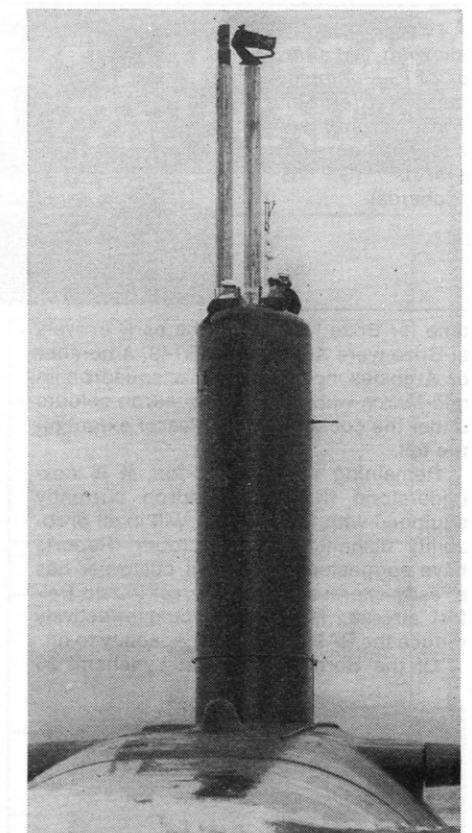
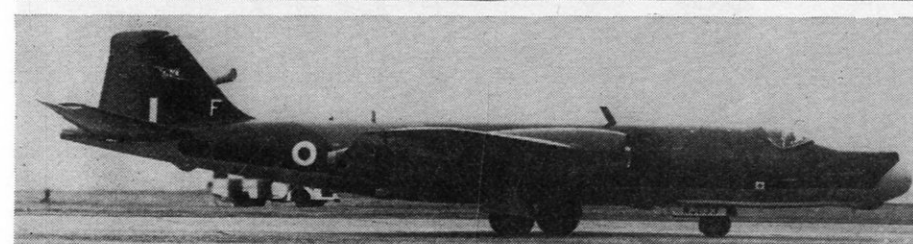
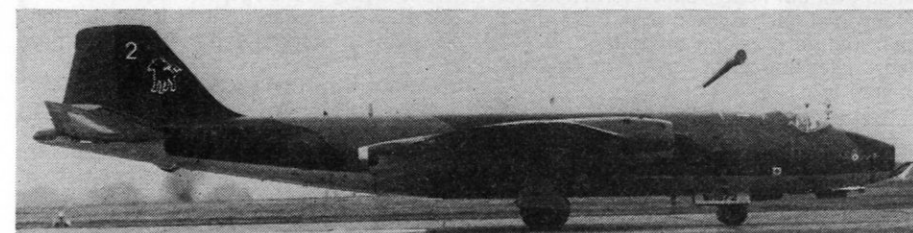
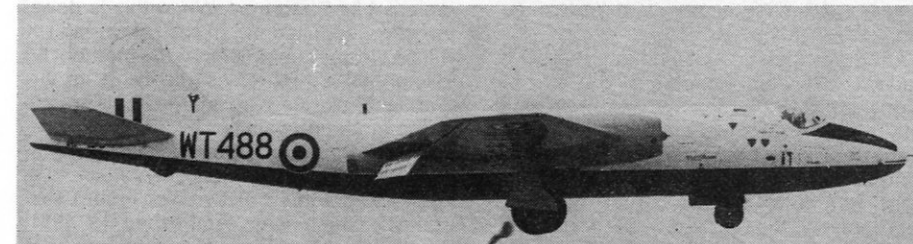
Air Display Diary 1976 by Peter F. Guiver

Some of the following dates are unconfirmed, and are thus subject to change or cancellation, so try to check with the organisers first in order to prevent a wasted journey.

May 30, 31	Old Warden, Beds	Shuttleworth Flying Day
June 4, 5, 6	Blackpool	Air Display and Rally
June 6	Staverton, Glos	Skyfame Museum Display
June 6	RAF Cosford, Staffs	Museum Open Day
June 19	RAF Waddington, Lincs	Open Day
June 20	Duxford, Cambs	IWM Vintage Air Day
June 27	Old Warden, Beds	Shuttleworth Flying Day
July 3	RAF Upper Heyford	USAF Open Day
July 4	RAF Mildenhall	USAF Open Day
July 4	RAF Cosford	Museum Open Day
July 2, 3, 4	Northampton/Sywell	PFA Rally
July 17	Strathallan, Perthshire	Vintage Aircraft Display
July 25	Old Warden, Beds	Shuttleworth Flying Day
July 31, August 1	RAF Greenham Common	International Air Tattoo
August 1	RAF Cosford	Museum Open Day
August 4 (Wednesday)	RAF St Mawgan	International Air Day
August 7	RAF Bentwaters	USAF Open Day

In addition to the above mainly military events, there are numerous other aeronautical occasions, staged by the many flying clubs and smaller airfields up and down the country, including rallies, fly-ins, breakfast patrols, aerobatic competitions, etc. Whilst most of these events are not mounted as public spectacles, some interesting or elderly machines do turn up, and these can be seen if the airfield has a public enclosure, so why not give your local airport a call to see if anything is going on — they are usually very helpful.

Below top Long-time resident at Cottesmore with 231 OCU was Canberra T4 WT488. Surprisingly, when 360 Squadron moved to Wyton so did this aircraft, and has continued to operate with the squadron ever since. To the best of our knowledge it still sports this training paint scheme. **Centre** Canberra E15 WH972 of 98 Squadron which disbanded on February 27. **Bottom** Canberra T17 WJ633 of 360 Squadron which moved to Wyton from Cottesmore last year (S. G. Richards).



The 3,500 ton nuclear powered Fleet submarine HMS Churchill seen leaving Faslane in February. Launched in 1968 and completed two years later, HMS Churchill is conventionally armed with homing torpedoes and can be used against other submarines and surface craft. She is capable of continuous patrols at high underwater speed independent of base support and can circumnavigate the world without surfacing. Churchill is 285 feet long, has a beam of 33 feet and carries a complement of 95 (Leading Airman Iain Ferguson, HMS Neptune).

KEEPING PACE with developments within the RAF, is at the present a rather absorbing pastime. The following extracts from S. G. Richards make interesting reading:

'RAF Cottesmore came under Care and Maintenance at the beginning of March, pending its reactivation as the MRCA Operational Conversion Unit base, later in the decade. Only a year ago this base housed four units, 231 OCU on Canberra B2s and T4s, 98 Squadron with Canberra E15s used for high level calibration and ECM work, 115 Squadron using Argosies for low level calibration work, and 360 Squadron using Canberra T17s in the ECM role.

'360 Squadron moved to Wyton during 1975, whilst 231 OCU moved to Marham in mid-February, aircraft then operating with the unit included B2s WH919/V, WJ637/Z and T4s WE192, WJ869, WJ877. 98 Squadron disbanded on February 27 although a number of its aircraft will in fact join 100 Squadron at Marham to continue high level calibration sorties. 100 Squadron arrived at Marham from West Raynham on January 6. With all the Canberras and Victors now at Marham, this is surely the RAF's biggest base, in terms of aircraft numbers.

'Finally, the Argosies of 115 Squadron also left Cottesmore in mid-February, this

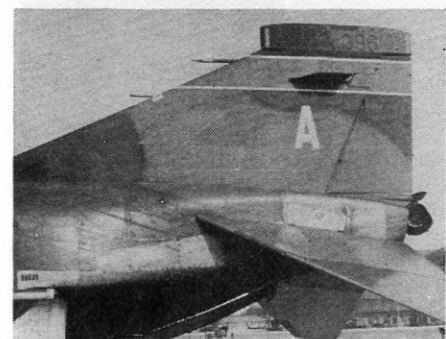
A fine picture showing Varsitys of 6 FTS Finningley last September. These aircraft will either be burned or stored (S. G. Richards).



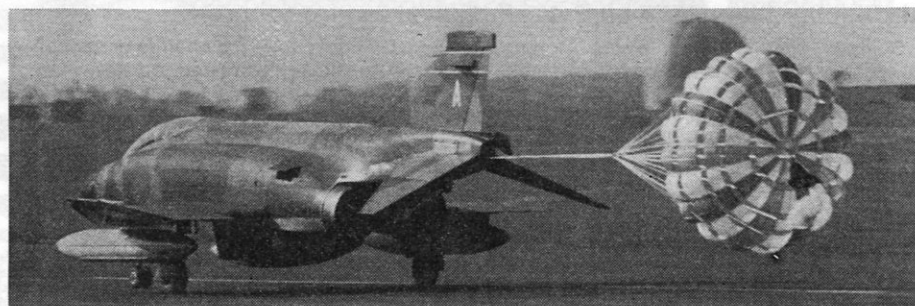
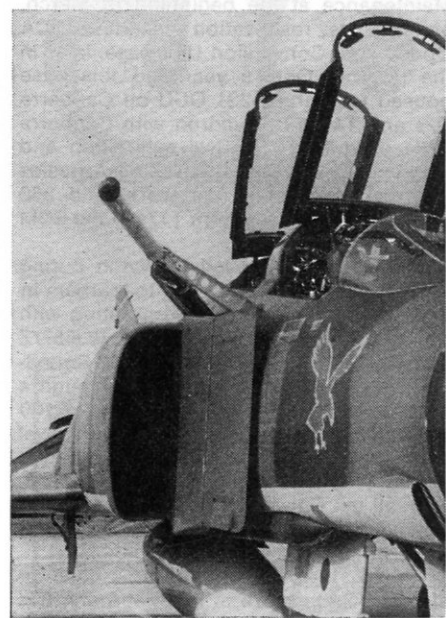
time for Brize Norton. Of the early arrivals at Brize were XP448 and XR143. A number of Argosies noted from this squadron in mid-March were wearing squadron colours under the cockpit and to a lesser extent on the tail.

'Remaining at Brize Norton, it is now understood that 53 Squadron currently equipped with ten Belfasts, will in all probability disband during October. Reports have suggested that a civil customer has already expressed firm interest in two Belfast aircraft. This move would effectively reduce the RAF's heavy lift capability to nil.

'Of the Hercules Wing at Lyneham, 36



Above A close-up for modellers who wish to modify their Phantoms. The pod is for Radar Warning Receiver and the aerial blade on the side is for Instrument Landing System. Note the brake 'chute door still open after deploying the parachute. Below Another modelling shot showing the retractable refuelling probe deployed and the triple rear view mirrors on each crew member's canopy. Note also the squadron eagle insignia (Mike Gething).



The OC 23 Squadron's aircraft landing. Note the coloured segments in the brake parachute, and the modified fin (Mike Gething).

Squadron disbanded on November 3 1975 and 48 Squadron on January 7 1976. At least two Herks have been noted in a new tactical camouflage of grey/green/grey, XV305 and XV298. Sadly March has seen the retirement of the Varsity Flight of 6 FTS at Finningley, with no sign of the Jetstream, its would-be replacement, being brought out of storage. It may be safely assumed that a number of these Varsitys will end on fire dumps, while others should move to Kemble, for storage with 5 MU.

'23 Squadron moved its newly acquired Phantom FGR 2s from Coningsby to Wattisham on February 25, where it joined 56 Squadron Lightnings in the air-defence role. Phantoms in use with 23 Squadron at the beginning of the year included XV422/C, XV490/G, XV496/H and XV434/J'. Mike Gething was at Wattisham and sent us this report:

'Although the sun was shining, the wind made it very cold standing at the end of Wattisham's main runway. Our radio link with the control tower reported that the formation was due overhead in four minutes. Two minutes later the exhaust of eight Phantom fighters could be seen approaching the airfield. The formation roared over our heads, split into two flights of four, and each passed over the airfield again, before breaking off to land. No 23 (Red Eagle) Squadron, RAF, had returned home to roost.

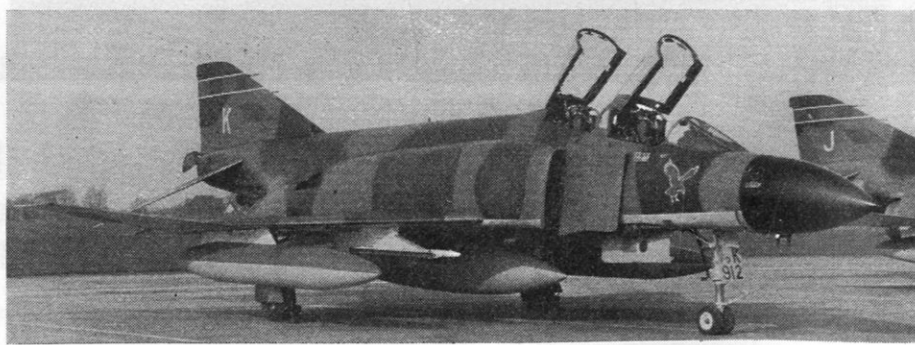
'The arrival of 23 Squadron to RAF Wattisham was another step in the plan to increase the effectiveness of the UK Interceptor Alert Force (IAF) by re-equipping Lightning units with Phantoms. With two crew members, improved radar, increased range and weapons capability, the Phantom offers increased efficiency over the Lightning. The full introduction of the Phantom does not, however, mean Lightnings will disappear entirely. Binbrook will house 5 and 11 Squadrons, together with a Lightning Training Flight until the introduction of the Air Defence variant of MRCA — the Tornado — in the mid-1980s.

'The other unit at Wattisham is 56 Squadron, who were withdrawn from Cyprus early in 1975. They are still flying the Lightning F6, but in the summer these are to be replaced by Phantoms. When this is done, the "Phantomisation" of the IAF in the UK will be virtually complete. At the moment 56 (designate) Squadron is receiving its aircraft and working up at the OCU in the accommodation vacated by 23 Squadron.

'For 23 Squadron, the re-equipment with the Phantom FGR2 means a return to a squadron tradition of two- (or multi-) seat fighters which was established in 1931. While flying Bulldogs, the squadron was issued with six Hart fighters for evaluation. This was a success and the type was pro-

Continued on page 560

One of the two dual-control aircraft on strength, XT912/K (Mike Gething).



AIRFIX NEW MODELS FILE

GERMAN 'E' BOAT 1/72nd SCALE

When is an 'E' Boat not an 'E' Boat? When it's an 'S' Boat.

That was the German name which stood for 'Schnellboote' and meant 'fast attack boat'. And no wonder: the craft had triple diesel engines producing a speed of 35 knots.

The British called it an 'E' boat, an abbreviation for Enemy War Motorboat.

At the outbreak of war, 18 of the boats were in service and operations began in the Baltic against Polish shipping. North Sea Patrols started with a second Flotilla based at Heligoland.

In May 1940 with the Western offensive the boats attacked British shipping for the first time. With the capture of French ports, they had easy access to British convoy routes.

Minelaying operations as well as 'hit and run' attacks were carried out

by these powerful boats and night attacks proved to be most successful.

The Airfix 'E' boat is 17 1/2 inches long and captures perfectly the menacing lines of the boat. The kit contains nearly 300 pieces including torpedoes, depth charges, gunners, crew, right down to the German ensign.

You can make either a complete or waterline model with markings for the early series model.

For up to date news and details of Airfix models get the Airfix Magazine.

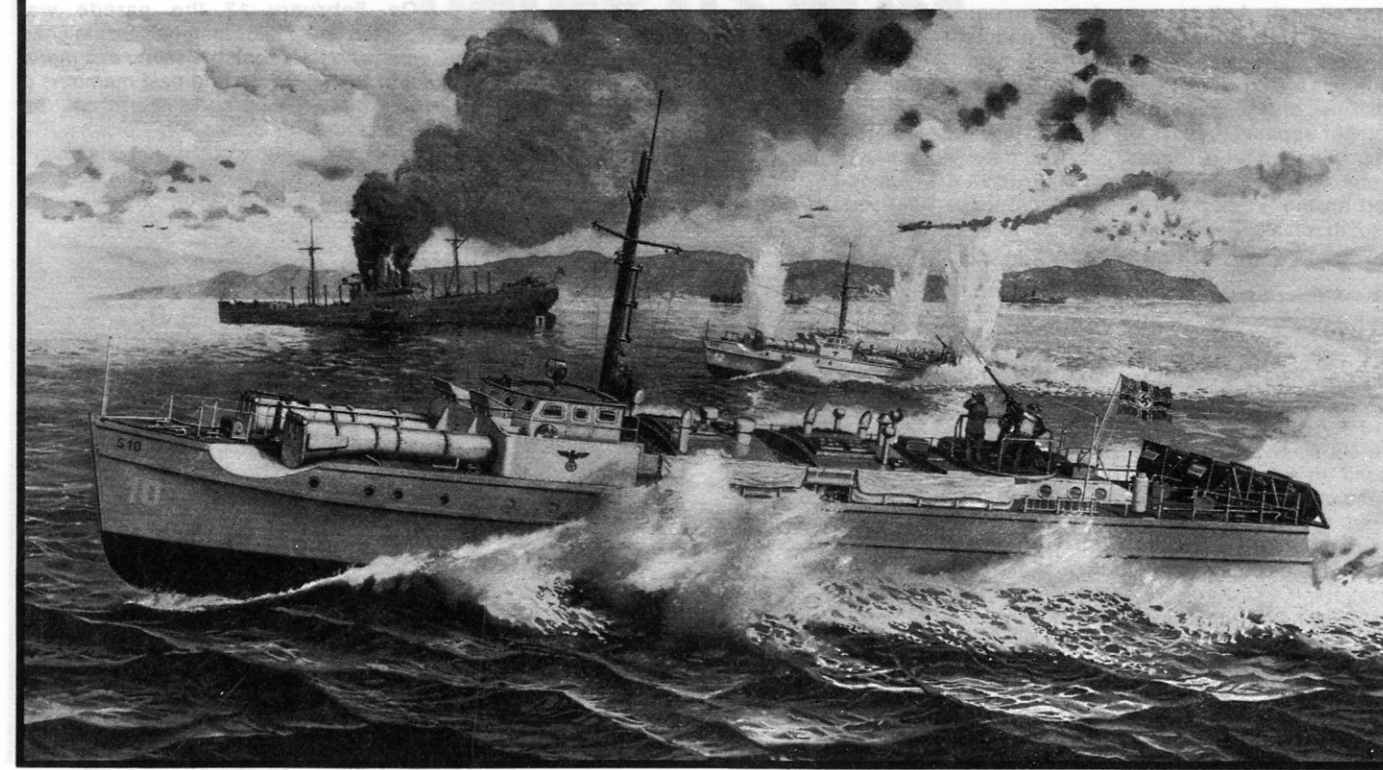


German 'E' boat.
72nd Scale Series 10.
New to the world's biggest range
of construction kits.

Technical Details

Date of origin:	1933.
Engine:	3-1,320 h.p. Daimler Benz 16 cylinder diesels.
Top Speed:	35 knots.
Armaments:	20mm Bofors gun plus light machine guns. Four torpedoes.
Overall length:	106ft.
Displacement:	78 tons.
Crew:	18
Range:	600 miles.

THE FASTEST GUN BOAT IN THE WEST.





Seen here off the Sussex coast in this photo by MoD photographer Laurie Mahoney is HMAFV Sunderland, second of the new class of RAF rescue and target-towing vessels described below.

This new class, known as Rescue Target Towing Launch Mark 3, have all, by Royal Assent, been given names. The prototype now in service, is named *Spitfire* and those following *Sunderland* will be named *Stirling* and *Halifax*. Procured by the Navy Department under the terms of inter-service rationalisation, these vessels have steel hulls and, with two Paxman diesel engines, have a maximum speed of 25 knots and a cruising speed of 15 knots. They are 78 feet in length with a loaded displacement of 60 tons. The RAF crew consists of one officer and eight airmen.

Finally, a piece from Terry Gander: 'One of the results of the latest round of the Defence cuts has been the disbandment of the Parachute Squadron, Royal Armoured Corps. The squadron was disbanded during a parade at Old Sarum on a wet and overcast day, namely February 12 1976.

'The Parachute Squadron was formed from Cyclops 2nd Royal Tank Regiment and the Special Reconnaissance Squadron in 1965, and it has seen service in Cyprus, the Radfan and inevitably, Northern Ireland. Since its inception, the Parachute Squadron's task has been that of long range anti-tank defence for 16 Parachute Brigade, and its last equipment was the Ferret Mk 5 armed with Swingfire missiles, and in 1973 the squadron was issued with eight Scorpion light tanks. Other wheeled equipment included the Land Rover, and in the squadron's early days it was one of the few units equipped with the Hornet armoured vehicle armed with the Malkara guided missile.

'On February 12 the parade was inspected by Field Marshal Sir Michael Carver who later took the salute at a march past of the squadron and past members of a unit that was perhaps short-lived, but almost unique in British Army history. The trophies of the Squadron have been placed in the Airborne Forces Museum, but the active life of the Squadron has ensured a place for it in the history of the RAC.' □

duced as the Demon, and issued to, among others, 23 Squadron. In 1938 these were modified to take an early form of powered turret, but after the war broke out in 1939, the unit re-equipped with Blenheim Ifs. There then followed the Havoc, Boston, and various marks of Mosquito, until just after the end of the war, when the squadron disbanded. It reformed a year later in 1947 with the Mosquito NF36, and then worked its way through the Vampire NF10, Venom NF2/2a and NF3 until the arrival of the Javelin. The Javelins were finally given up in 1964, when the squadron broke with tradition and went over to the Lightning F3, a single-seater. The improved F6 version followed, and remained until October 31 1975, when 23 Squadron disbanded. It officially reformed again on December 1 as a Phantom unit at Coningsby, continuing the two-seat tradition.

'The squadron aircraft are principally ex-14 Squadron from RAF Germany, and include, in addition to the four mentioned above, XV396/C — CO's mount, dual-control with RWR; XV421/B, XV432/D, XV465/E and XT912/K — dual-control. Another aircraft, presumably "F", is expected to be taken on strength shortly.

'The aircraft are finished in the now standard all matt dark green and grey upper surfaces, and light aircraft grey under-surfaces. The national insignia B-type roundels are on all six positions, and the fin flash is of the raked style. The serial number appears in black on the rear fuselage, wing under surfaces; and the "last three" figures appear to the rear of the RWR pod on the fin, and the nose wheel door, also in black. The squadron code letter

appears in white on the fin and in black on the nose wheel door above the last digit of the "last three".

'The squadron's Red Eagle appears on the nose with yellow beak and talons, and a white outline. The squadron colour band of red/blue/red/blue/red is carried beneath the RWR pod on the fin with a white line above and below the band. Other small details include a finless Sparrow missile (carrying training electronics) carried on the forward starboard position, painted blue with a small red eagle on the nose. The aircraft can carry two outer wing fuel tanks, half camouflaged, and one centre-line tank. The inner stores pylons may be fitted with Sidewinder missile launching shoes.'

Now some Naval news from Paul Beaver: 'Named after the famous World War 2 flying boat, HMAFV *Sunderland* is the second in a new class of Royal Air Force marine craft being built to replace old and familiar RAF high speed launches.

The *Sunderland* has been built by James and Stone Ltd of Brightlingsea, Essex, and was officially handed over by the builders to the Director of Marine Craft (RAF), Group Captain James Burgess, on April 2 1976.

Sunderland is a new rescue and target-towing vessel designed primarily for operations in coastal waters to support aircrew training by towing targets, recovering weapons and training materials from the sea, and supporting search and rescue helicopter training. This new vessel is also capable of undertaking sea and rescue duties.



The Royal Navy's aircraft carrier HMS Ark Royal interrupted her birthday celebrations on February 22 to go to the assistance of the US Navy. Two Sea Kings of 824 NAS, based on Ark, flew a 450 mile round trip to evacuate a seaman suffering from a ruptured appendix from an American submarine. Just as the pick-up was about to start, the sick crewman and one of his rescuers, CPO Aircrewman Roy Withell, were swept off the sub by a sudden wave and dropped in the drink as shown here. Fortunately, in less than a minute both men were winched out of the water by the hovering 'chopper', and the sick man was then flown to hospital in the Azores (Leading Airman Steve Collinson, Ark Royal).

AIRFIX NEW MODELS FILE

NORTH AMERICAN F-86D SABRE

The North American F-86D Sabre Dog was the world's first single-seat, all-weather interceptor.

Evolved from the classic F-86 Sabre—America's first swept-wing jet—the F-86D was designed as a pure interceptor at a time when a major Soviet manned bomber attack on the North American continent was considered a distinct possibility.

The Sabre was unique in its day in that it had an all-rocket armament which consisted of 24 "Mighty Mouse" 2.75 inch Folding Fin Aircraft Rockets housed in a retractable ventral tray. The rockets had a range of 4,500yds and could be fired in groups or salvos.

As well as being in widespread USAF service, foreign air forces began receiving Sabre Dogs in the late '50s, Denmark, Japan and Turkey all being recipients.

On July 16, 1953, an F-86D set a

new world air speed record of 715 m.p.h.

The Airfix F-86D Sabre contains nearly fifty parts and is an exact replica of the original.

Striking transfers are supplied to make it the shark mouthed interceptor of the U.S.A.F. 520th squadron, Washington or the 512th squadron based at Manston, England. Pilots name transfers are also included.

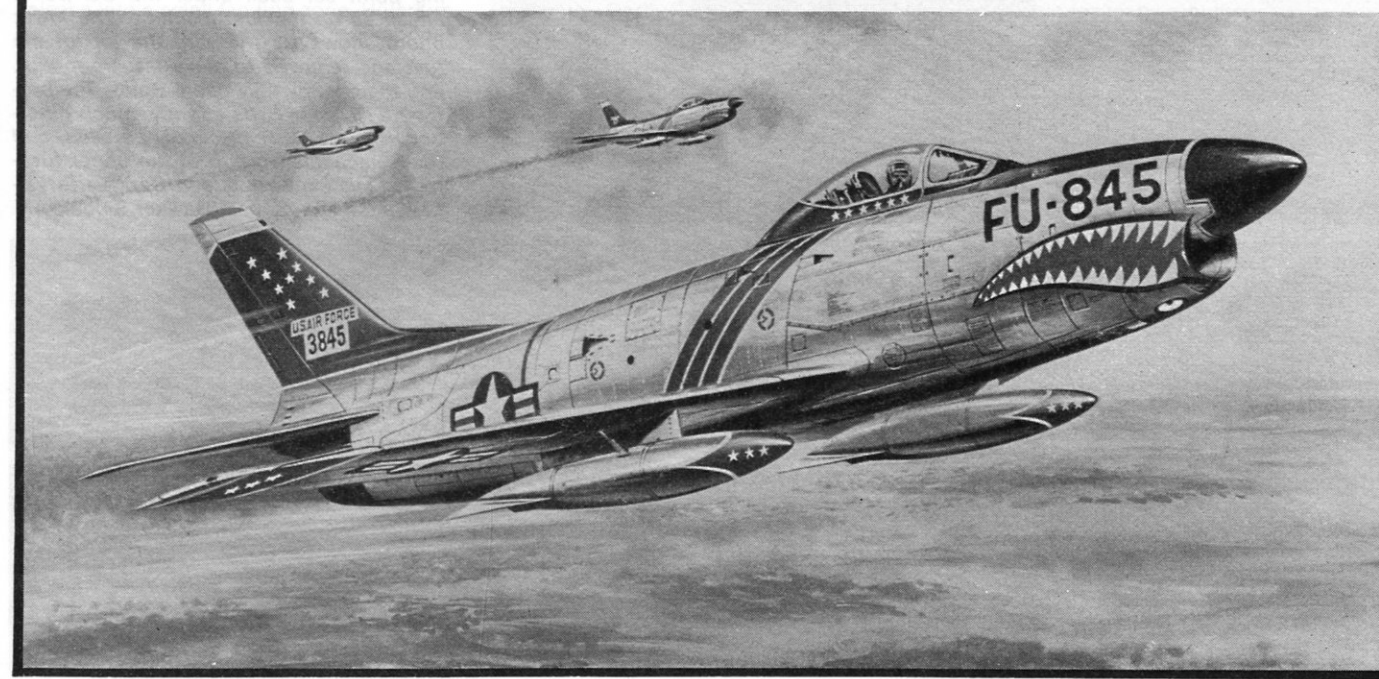
For up to date news and details of Airfix models get the Airfix magazine.



**North American F-86D Sabre.
72nd Scale Series 2.
New to the world's biggest range
of construction kits.**

Technical Details	
Date of origin:	1949.
Engine:	7,650lb-thrust General Electric J47-33 with afterburner.
Top Speed:	693 m.p.h.
Service Ceiling:	49,600ft.
Combat Radius:	277 miles.
Wingspan:	37.1ft.
Length:	40.2ft.
Height:	15ft.
Armament:	24 "Mighty Mouse" 2.75 inch Folding Fin Aircraft rockets.

THE DOG WITH A MIGHTY MOUSE UNDER ITS NOSE.





Michael J. F. Bowyer

Army-air colours 1937-45

The Hotspur — first of the gliders

FOLLOWING GERMAN limited use of gliders in May 1940, Air Ministry realised they were a useful weapon. Pilots with civilian gliding experience gathered at Ringway, Manchester, where on July 1 training of parachute troops commenced. Winston Churchill had ordered the training of 5,000 paratroops along with a glider-borne force of troops with supplies to be ready by spring 1941, an impossible demand.

The Central Landing Establishment was created at Ringway in September 1940, embracing a section to train glider pilots and which became the Glider Training Squadron, and the Development Unit already in being to undertake technical research and which became the Airborne Forces Experimental Establishment of later years.

June 1940 had seen the issue of a hurriedly prepared specification for an eight-seater glider. Basic reasoning behind 10/40 was that a towed glider could carry a greater payload than any aircraft since the former relied upon the combined wing

loading of the two craft. Ideally, tug and glider would be similar in size. A glider force carrying 5,000 men was needed, requiring 200 25-seater gliders backed by a reserve double this strength, ie a total of 600 gliders.

Before detailed requirements were finally agreed it was decided to carry out trials with engineless light aircraft. Five BA Swallow IIs (BJ575, BK893-896) were impressed and their engines removed. All five were at one time towed behind a Heyford bomber at RAE Farnborough testing the idea of a glider train. Tests were also made to see whether wooden gliders could be located by radar. The suitable length of tow rope needed to be established, and thoughts roved around gliders carrying extra fuel to extend the range of powered aircraft. Gliders might also carry bombs increasing a bomber's offensive load. Indeed, gliders could be loaded with explosives and aimed, after which the pilot would bale out to safety. But the prime role was troop and equipment transport, the essential need

glider pilots.

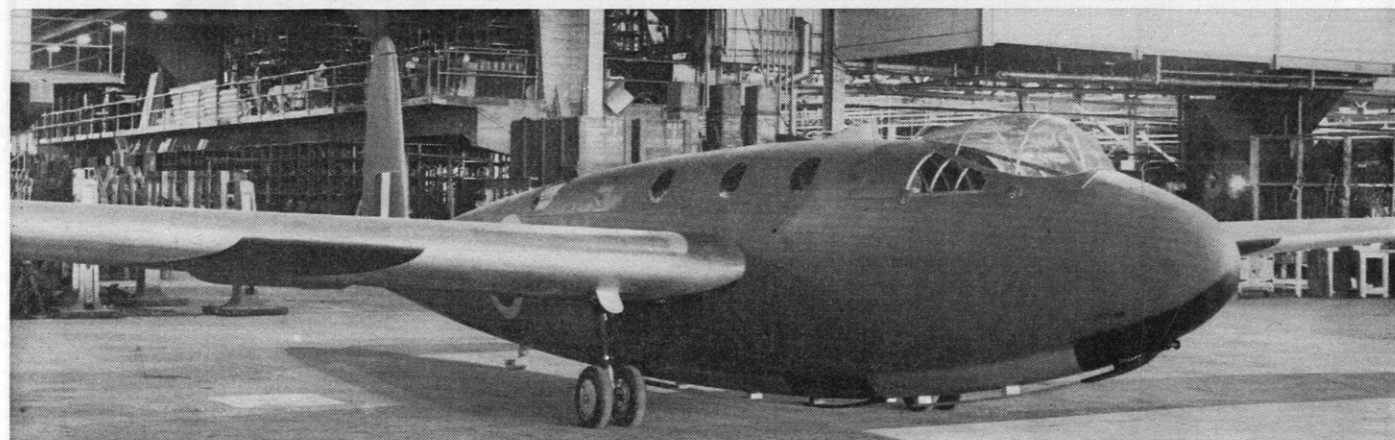
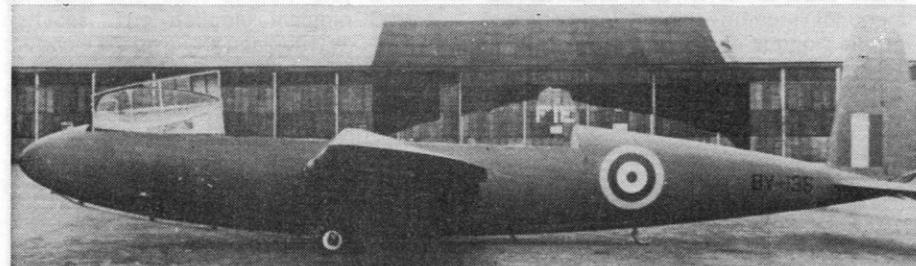
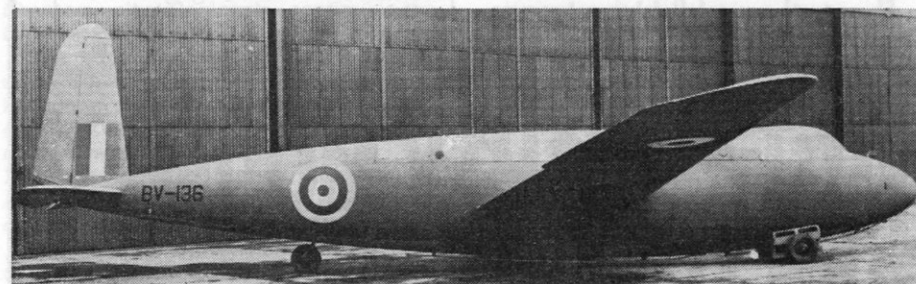
An assortment of sailplanes (including an SSG, Minimoa, Kirby Kites and a Rhönbusard) initially equipped the Glider Training Squadron and these were camouflaged Dark Green/Dark Earth and had yellow undersurfaces. Type A roundels were painted beneath the wings in trainer style, but they wore no underwing serials. Tiger Moths and a couple of Avro 504Ns were used as tugs. Any notion that pilots could train on primary gliders was soon scotched. Military gliders would demand skilled handling for which an EFTS was needed — which meant basic training on powered aircraft. First pilots would have to come from the RAF.

A site for glider training was chosen at Side Hill to the east of Newmarket. There the GTS moved on November 21 1940 taking its sailplanes and Tiger Moths, the latter in standard training markings without any unit identity. In a region of intense flying this was far from ideal. Another site at Haddenham, Oxfordshire (later called Thame) was selected, the unit moving there in January 1941. Haddenham, a crude airfield with little or no accommodation, was suitable for Tiger Moths towing of sailplanes although the landing run was short. Nevertheless the five Tiger Moths flew in, five Kirby Kites following by road.

Could a glider force be viable against fighters? Tests at AFDU Duxford and over Royston Heath in February suggested it could, as the GTS increased its strength to 12 Tiger Moths, three BA Swallows (BK895, BK893, BK897), two Avro 504Ns, 12 Kirby Kites and a Slingsby Falcon.

Meanwhile training of Army glider pilots had commenced. On October 12 an order had been given for the impressment of 26 DH Moth Minors which were allocated to front line army co-operation squadrons whose pilots trained glider pilots as a side-

Left Two views of BV-136, the third Hotspur prototype fitted with Frise ailerons in an attempt to cure the ineffectiveness of the ailerons on the first two aircraft, BV134 and BV135. BV-136 was the first to have the towing point set back under the CG point. Finish as on the first machine. The lower photo shows BV-136 with the top of the fuselage removed to allow fast troop exit, and the canopy fully open. **Below** The prototype Hotspur 1. Its canopy, much different from Mk IIs, can clearly be seen, and the detachable portion of the upper fuselage. Finish is Dark Green/Dark Earth/yellow and black stripes (Hawker Siddeley).



Lysanders served as interim Hotspur tugs mainly with 5 GTS, but the machine here is shown during trials at Hanworth linked to a Hotspur II (Hawker Siddeley).

line. This interfered with operational commitments and was soon abandoned.

Specification 10/40 for the first military assault glider resulted in an order placed with General Aircraft Limited for 390 examples ordered off the drawing board. The glider would carry a pilot and eight soldiers, and should be able to glide for 100 miles when released from 20,000 feet. It was to be a sailplane of sorts built of wood and to afford easy production by furniture manufacturers. The GAL 48 became the Hotspur.

Design and prototype construction was rapid and in December the prototype Hotspur 1, BV134, first flew. Early tests revealed that the streamlined machine of monocoque construction was able to glide 83 miles after release at 20,000 feet, a highly creditable performance. After brief trials in maker's hands, BV134 passed to CLE on January 17 1941 leaving BV135 at the makers for trials. BV136 went to RAE on January 8 1941 for tests which lasted until July 1942.

Soaring was possible using the Hotspur 1 whose troops awkwardly disembarked after removing a long two-piece canopy amidships. The plan was for the glider to shed its undercarriage then land on the central skid which was mounted on a rubber block. Unfortunately design requirements were issued before enough consideration had been given to operational loads, let alone tactics. The basic requirement had been maximum range in free flight allowing distant release to achieve surprise. What was really needed was close release into a small landing zone. Hotspurs were intended for one or two operational

flights. When later they were used for intensive glider training they were seen to be expensive items, not very robust and complicated to repair because of their fine lines. Undercarriage jettisoning would have been costly, and retrieval a problem. During trials it was found that the wing spar and tailplane stresses had been underestimated raising safety questions. Only 22 Hotspur 1s were built by Slingsby and GAL, before the Mk II entered production in June 1941. Since the soaring long glide characteristic was unimportant the last Mk 1 BV199 appeared with eight feet lopped off each wing tip, as the prototype Mk II. Such drastic clipping pushed the stalling speed to around 70 mph with a full load and increased the landing run considerably, dangerous because no brakes were fitted.

Whilst the Mk 1 no longer suited operational requirements the Mk II had inherent disadvantages for training purposes. But a fast build up of the glider force was required and only by using Hotspurs could this be achieved. Interest was by now concentrated on the 25-seater Horsa, but until this was ready the Hotspur would have to serve as operational glider and trainer. Indeed, 296 Squadron was equipped operationally with Hotspurs.

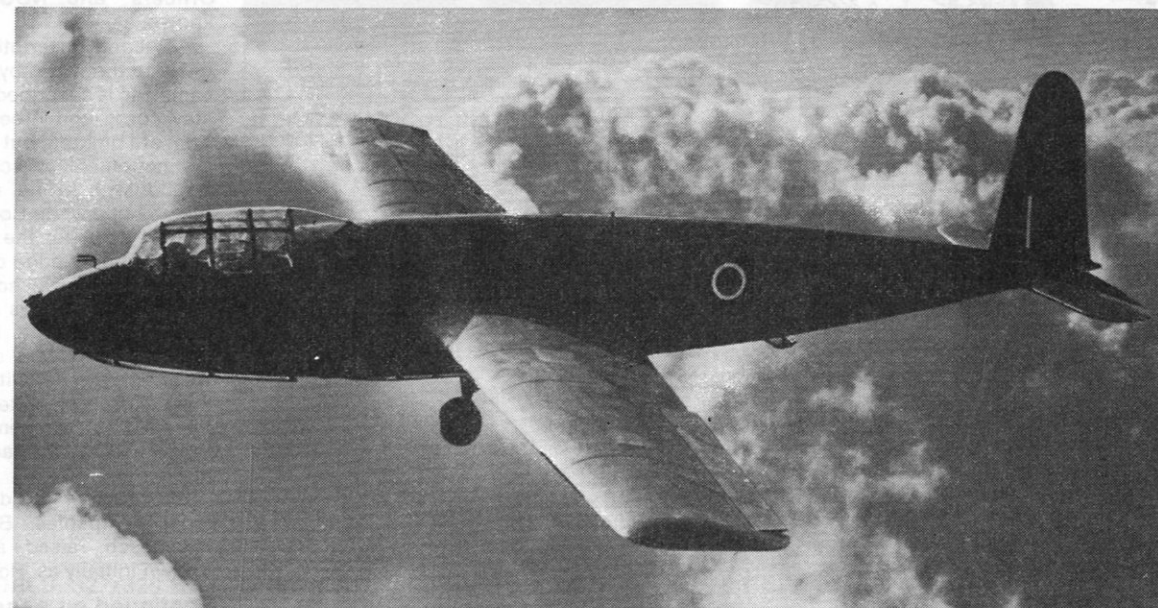
Another problem concerned suitable tugs. In February 1941 R. Malcolm Ltd modified a Hawker Hector as a tug. It was initially estimated that 25 Hector tugs would be needed for the GTS alone as Hotspur tugs. Eventually Hectors were used by most of the glider units.

Camouflage for tugs and gliders was presently Dark Green/Dark Earth. Their under surfaces were yellow. Standard

fuselage and wing roundels were applied with Type A under wing roundels. No serials appeared on under surfaces of these trainers. Fuselage serials were black. In March 1941 a suggestion was mooted that gliders and tugs would be easily visible if black diagonal bands were applied to their under surfaces as on target towing aircraft. This was agreed and by June some of the gliders were flying with black bands. Not all of the training force wore them even into 1942, but they can be considered as usual finish for training gliders.

In March 1941 the decision was made to forge ahead with a large glider force. On April 6 the first Hotspur 1 was assigned to GTS Haddenham where the unit had of late been using 12 Tiger Moths, a BA Swallow, an Avro 504N and 12 Kirby Kites. The first Hector tug K8119 was assigned there on March 31 1941. In March, too, the first Army glider pilots arrived for training, albeit on sailplanes. Some RAF pilots also came for training. Although the nucleus of the training force had formed there were insufficient Hotspurs until well into summer. Then the rough surface and short grass runways were unsuitable for these gliders which were towed on a 250 foot rope at around 110 mph. Shobden was chosen as an airfield more suitable, but it was not available for many months.

Continued next month.



The fourth prototype, BV137, had its span reduced to 45 feet although it otherwise resembled a Mk 1. Shown here is a production Mk II incorporating the revised canopy and 45 foot wings (Hawker Siddeley).

British Army uniforms

1660-1900

The Regiments von Hompesch by Bryan Fosten

EARLY IN 1794 Baron Charles von Hompesch-Bollheim, a former Colonel of Hussars in the Prussian service, was asked by the British Government to raise a corps of foot jäger and a regiment of mounted 'chasseurs' to serve as part of the British Army then engaged in fighting the armies of the French Revolution.

His offer of service was accepted and the first corps to be formed was the infantry unit which had a staff including a major, a quartermaster, and an adjutant together with a surgeon major and two companies of 'jäger zu fuss' each consisting of three

officers (a captain, a lieutenant and an ensign) and 102 rank and file.

Vicomte Grouvel, the eminent French historian who specialised in the history of the emigré French units and other foreign regiments in the British service of this period, records that this short-lived corps served with courage in the fighting at Boxtel on September 13 1794, forming a part of the Royalist Forces commanded by the Hanoverian General von Hammerstein, in the Linsingen Brigade which comprised emigré French and Hessian units.

Hompesch's infantry was shot to pieces

in this brief action losing three-quarters of their men engaged and were finally forced to retreat to Middelröde where they arrived with only the major, three other officers and 16 of the jägers unscathed. The remainder were either dead, left seriously wounded on the field or taken prisoner by the French. As a result a return of October 1 1794 gives the unit as only four Staff, six company officers and 110 jägers, many of whom were still suffering from wounds. The French revolutionary forces recorded that 97 were taken prisoner. Subsequently the debris of the two companies was forced to retreat deep into Germany, eventually arriving at Celle, then to Oldenburg and from thence to Bergen where they were disbanded on March 31 and the officers and rank and file incorporated into two units commanded by Englishmen, viz Hardy's Royal York Fuzileers and Ramsay's York Rangers.

Uniform

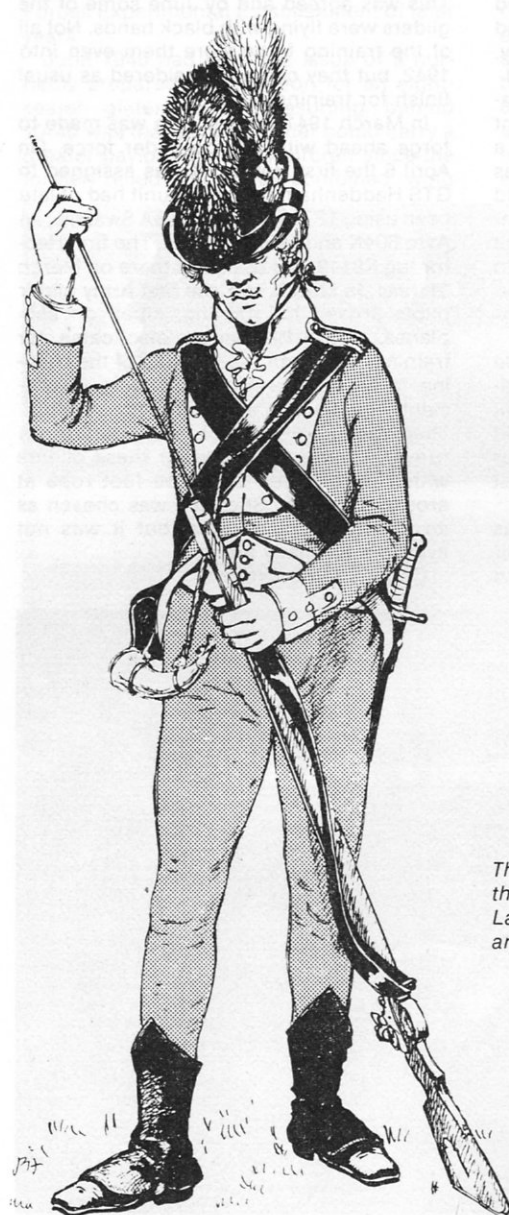
The first recorded uniform of the corps given by Grouvel is as follows. A small black felt round hat (shaped like a bowler) the sides of which were kept up with green stay cords. A green lace trim edged the brim and over the crown a large black bearskin 'caterpillar' crest ('chenille') ran from back to front. On the left side of the cap was a large dark green cloth cockade with a white metal button from the rear of which sprang a long green plume.

The short skirted dark green 'habit' had a scarlet collar, scarlet shoulder straps, cuffs, lapels and turnbacks. The vertical cuff opening had three buttons, the part of the opening above the cuff level being trimmed with red piping. White metal buttons. Beneath the coat a white single-breasted waistcoat with square cut bottom edge was worn and the legs were clothed in tight green pantaloons worn in short calf-length black woollen gaiters with the tops coming to a point in front. The equipment was black leather and comprised a pouch belt worn over the left shoulder and a second belt over the right shoulder to support a sword-bayonet carried in a black frog on the left hip. A brass powder flask on a green woollen cord and a German rifle with brass mounts completed the costume. Officers' and NCOs' distinctions not known.

A second description of this corps was given to the writer by C. C. P. Lawson. The same cap is described except that the green stay cords and green lace edging to the brim are omitted, but the cap has the added distinction of a scarlet pleated turban bound with white metal chains. Green plume but a white Bourbon cockade. Same type of coat but the collar, pointed cuffs, lapels, bottom edge of coat, turnbacks and shoulder straps all edged with white. Same waistcoat, breeches and gaiters but white equipment with a French sabre-briquet substituted for the sword-bayonet. Brass mounted rifle but with a wide fawn leather sling. Lawson states that this may be intended to represent an NCO or even an officer (with silver lace edgings perhaps?) in Field uniform.

Shortly after the dissolution of the foot jäger companies, Baron Ferdinand von Hompesch raised a much larger unit. Known initially as 'Hompesch's Fuzileers' it

Continued on page 566



The first recorded uniform of the corps. To the right is the cap as described by C. C. P. Lawson and the jacket with pointed cuffs and piping.



YOUR INTERNATIONAL MODEL MAIL ORDER HOUSE

Suppliers to the British and Overseas Governments

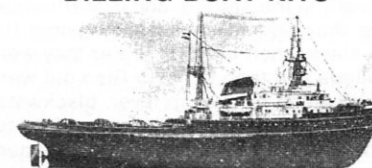


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D0016 G.B. Nat. Insignia
D0017 Japan Rita, Betty, Peggy
D0018 Germany Tanks
D0019 U.S.A. Tanks
D0020 G.B. Spitfire, Typhoon
D0021 Russia Tanks
D0022 Germany JU 88
D0023 U.S.A. Nat. Insignia
D0024 Italy Nat. Insignia
D0025 Russia Tupolev SB-2
D0026 Italy Fiat CR 42
D0027 Germany Heinkel HE177, HE 219
D0028 G.B. Boomerang, Tempest
D0029 U.S.A. B-25 Mitchell
D0030 G.B. Bristol Beaufighter
D0031 Germany ME 210/410 Henschel
D0032 U.S.A. P-38 Lightning
D0033 G.B. Westland Lysander
D0034 Japan Nat. Insignia
D0035 U.S.A. B26 Marauder
D0036 France Leo 45, Potez 63
D0037 G.B. Mosquito, Defiant
D0038 Germany Dornier DO17
D0039 Germany FW200 Condor
D0040 U.S.A. F4U Corsair
D0041 G.B. Westland Whirlwind
D0042 U.S.A. TBF/TBM Avenger

D0043 Germany Heinkel HE 162
D0044 Russia Yak 9 Lavochkin
D0045 U.S.A. SBD Dauntless P 61
D0046 France Nat. Insignia
D0047 U.S.A. OS2U Kingfisher
D0048 Belgium & Holland Nat. Insignia
D0049 Italy Fiat BR20
D0050 G.B. Handley Page Halifax
D0051 U.S.A. F6F Hellcat
D0052 Germany JU52
D0053 G.B. Boston, Hudson
D0054 G.B. National Insignia 2
D0055 Germany Focke Wulf FW 189
D0056 U.S.A. National Insignia 2
D0057 G.B. Armstrong Whitely
D0058 Fairley Firefly
D0059 U.S.A. Douglas DC 3
D0060 PBV Catalina
D0061 G.B. Hampden, Avro Anson
D0062 Germany Nat. Insignia 2
D0063 G.B. Vickers Wellington
D0064 Allies (Volunteers)
D0065 Axis (Volunteers)
D0066 Germany FW 190D
D0067 U.S.A. TDE Devastator
D0068 Germany Heinkel HE 51
D0069 Germany Fiesler 156
D0070 Japan KI 43/44/84
D0071 U.S.A. Finland F2A Buffalo
D0072 Vietnam War
D0073 Arab-Israeli War
D0074 Korean War
D0075 U.S.A. McDonnell Phantom
D0076 France Dassault Mirage
D0077 U.S.A. Sikorsky Sea King
D0078 U.S.A. Douglas A4
D0079 Italy Fiat G 91
D0080 G.B. BAC EE Lightning
D0081 U.S.A. F 86 Sabre
D0082 U.S.S.R. Ilyushin IL28
D0083 U.S.A. Douglas A1 Skyraider
D0084 U.S.A. A6 Intruder
D0085 France Dassault Mirage
D0086 G.B. Hunter/Gloster Meteor
D0087 U.S.A. F105 Thunderchief
D0088 U.S.A. General Dynamics
D0089 U.S.A. F5A Freedom Fighter
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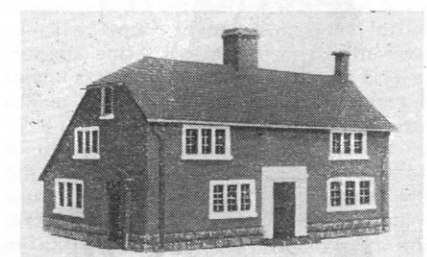
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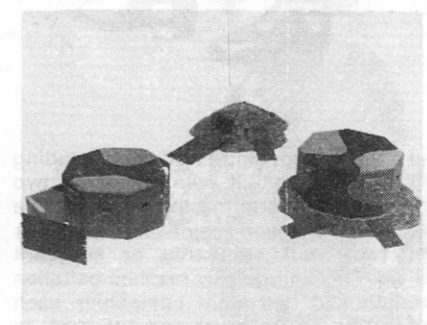


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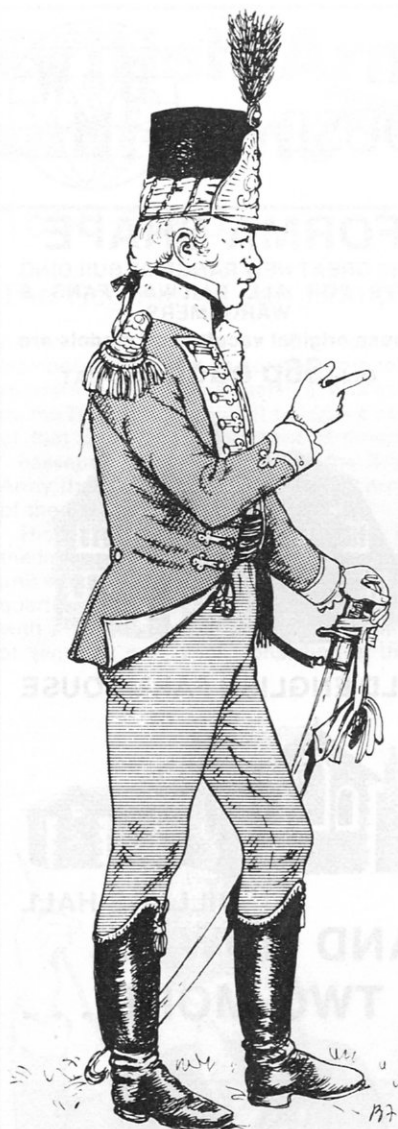
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Left An officer of the Corps according to Grouvel and the silhouette of an officer. **Right** The uniform of the Light Infantry and Fusiliers.

corps that he asked that they form part of an expedition which he was mounting to the Antilles. The fusiliers subsequently served with distinction in the West Indies, especially in the Antilles, and in Martinique, where they scored successes against the black slaves then in revolt. Later they went to Antigua and then to Porto-Rico but were much ravaged by swamp fever, blackwater fever and other tropical illnesses. Eventually the remnants of a once fine regiment had to be returned to the United Kingdom where the Baron von Hompesch received them with much distress. 17 of the surviving officers and 500 of the men were transferred to the 5th Battalion of the 60th Royal American Regiment.

In the meantime, on the Isle of Wight, recruits were still pouring in from Germany and it was decided to use them to raise another unit. Ferdinand commissioned the new regiment which, we learn from the 1797 Army List was called 'Hompesch's Light Infantry' commanded by the proprietor, Oberst-Baron Ferdinand von Hompesch. His Lieutenant Colonel was to be the redoubtable Franz von Rottenburg.

The smart uniforms and dash of this regiment attracted many recruits and the number of Germans, Austrians and Hungarians on the Isle of Wight swelled to such proportions that it was decided to expand the new Hompesch's even more and by September 1797 there were two corps of infantry and one of cavalry on the island. The cavalry remained for this period under the personal command of Baron Ferdinand while the infantry command rested with von Rottenburg. Eventually he left to command the 5th Battalion of the 60th Regiment where he found many of his former comrades.

The uniform of the Light Infantry and the Fusiliers was the same.

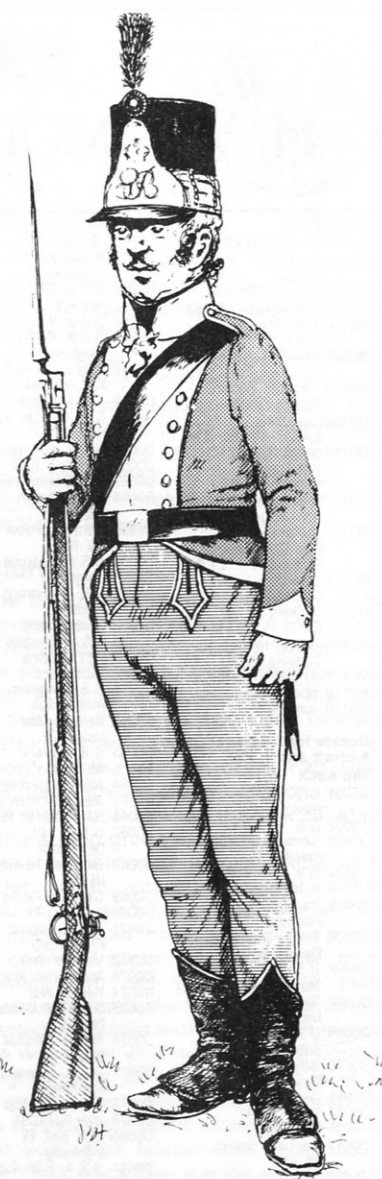
The headdress was a cylindrical felt 'chacó', with a large upright brass plate on the front embellished with the Royal Crown and 'GR' cypher. Around the base of the cap and passing under the brass plate was a scarlet turban, pleated and bound with yellow metal chains. On the front of the cap, at the top edge, a large black coiled cord cockade, with a central white metal button behind which a dark green plume was fixed.

The green coat was closed to the waist. It was the 'habit-veste' type with a scarlet collar, lapels, pointed cuffs, turnbacks and shoulder straps and white metal buttons.

The tight breeches were a bright blue-grey with red cord in pointed loops on the front fall. There was possibly also a red piping down the outside seam of the breeches. Short black gaiters. The cartridge pouch was carried on a black shoulder belt over the left shoulder and the sword-bayonet on a black waistbelt worn over the coat and with a brass rectangular plate on the front.

Muskets were carried by some companies and superior rifled carbines by others. The latter had brass powder horns on green cords. The riflemen carried the sword-bayonet but the musket men would have had socket bayonets.

From Grouvel we learn that the officers



wore the same pattern headdress as their men and not the 'Tarleton' helmet. The scarlet turban was bound with gilded chains and the front plate was larger, possibly gilded and had a raised and rayed design reminiscent of the 'tschapska' plates of Polish lancer regiments. The plume may have been fixed on the right side of the cap. Grouvel quotes a Captain Villiers-Marsbourg of the regiment who declared . . . 'The uniform was handsome and elegant, green with silver decorations, short coat, and pantaloons of pale blue . . .'. A silhouette of an officer of the corps, now in the Royal Army Museum at Brussels shows this uniform, but also indicates that the 'silver decoration' was in the form of trefoil lace ornaments which, on the lapels, consisted of button hole looping. In this silhouette portrait the officer wears a French style bullion epaulette of silver lace on the left shoulder but in a further known miniature, in this case of Major Crauford, we find him wearing 'wings' similar to those worn by the 5th Battalion of the 60th Regiment, in red cloth bordered with silver, lined with green, and with silver curb chain on the strap and crescent parts. On the outside of the wings is a short but thick silver fringe.

An interesting historical point made by Vicomte Grouvel is that the silver Maltese Cross, which formed the badge of the 60th, later the KRRC, and used by the 5th Battalion on their pouch belts, was derived from the relationship of the Hompesch family with the Grand Master of the Military Knights of Malta, whose badge it was.

The next unit to consider is the Hompesch Hussars, originally known as the Hompesch 'Chasseurs a Cheval' or 'Jägers zu Pferd'. They were raised in 1794 at the same time as the two companies of jägers who were cut to pieces in the same year and had a staff of a colonel, a major, two adjutants, a quartermaster treasurer, a chaplain, a surgeon-major and an aide and a sergeant major, with three squadrons each comprising three officers and 80 troopers. The corps was recruited in the main from Germans but with a fair sprinkling of Austrian and Polish cavalry deserters and even some Hungarian hussars. The residue, including some of the officers, were emigré Frenchmen.

In 1794 the regiment saw action in Germany. In 1795 it was part of the Anglo-Hanoverian force at Hanover. Further recruits had been added to the corps by this time and the strength was increased to six captains, 16 subalterns and 640 troopers and NCOs. They had over 700

horses at this time.

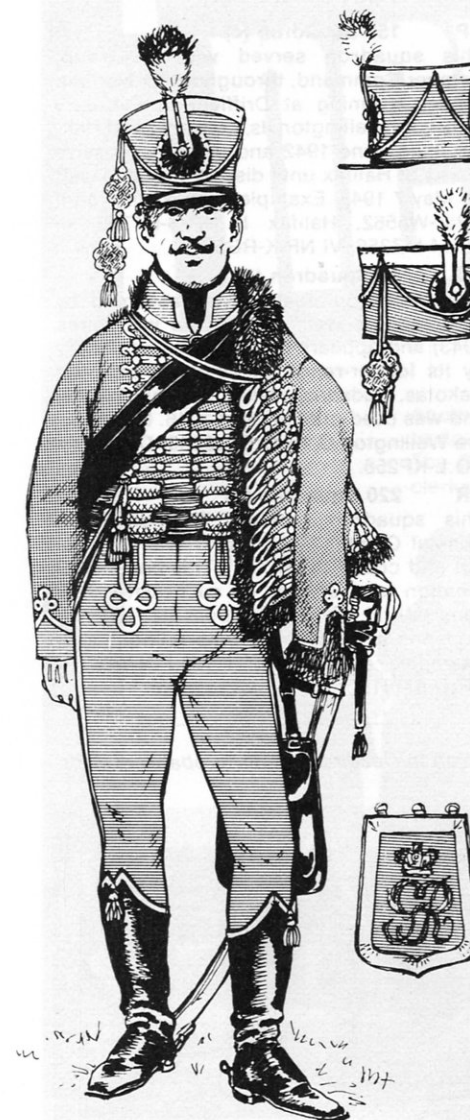
In September 1795 Charles von Hompesch was promoted to a Brigadier General in the British service and in December the same year the regiment embarked for Britain arriving in its lines in the Isle of Wight in December. Shortly after it was paraded in full review order before Prince George who was so impressed it is said he ordered the corps to be known henceforth as the 'Prince of Wales's Own', a story recalled by Grouvel but disputed in some British records.

Sir John Moore inspected the regiment shortly after and found them fit for duty. The Hompesch cavalry subsequently joined General Forbes' expedition to San Domingo. Like their infantry they suffered much from fevers and other malaise and also had many casualties from the enemy. Finally they became so weak they had to be returned to the Isle of Wight having lost most of their officers and the majority of the men from one cause or the other. Less than 200 of the men returned fit for duty. The remnants of this regiment remained in cantonments until November 1797 when it also was disbanded. Some 25 of the wounded and sick men were drafted to Guernsey in the Channel Islands where, during the period 1797 to 1800, they formed the 'Guernsey Hussars'.

The best description of the uniform is in Grouvel's fine work. According to his source the headdress was a cylindrical scarlet covered cap slightly wider at the top than the bottom (probably showing distortion because of the shape of the wearer's head) with white lace, cords, tassels, cockade loop, and cockade button. Black cockade with a white outside border. Plume white or white with a black tip. Stock black bordered white. Dark green dolman with a scarlet standing collar and pointed cuffs. Lace and cords white, buttons white metal. A dark green pelisse with black fur and white lace and cords. Grouvel records that one document gives the pelisse red pointed cuffs. Crimson cord barrelled sash with white barrels. Scarlet breeches with white lace and knots. Short black boots with white cord and tassels and steel spurs. Black leather cartridge pouch belt and carbine swivel loop with brass fittings. Slings the same. The belts of the officers were probably of red Russian leather with white metal fittings. Sabretache faced with red cloth with a white cypher 'GR' below the Royal Cypher and Crown in the forward rounded corners and in the pointed rear corners. It is likely that the officers had this shabraque and the NCOs and troopers had only a black sheepskin with red lining. Round red valise with a border of white with 'HH' cypher in the centre. Folded on it a white cloak.

C. C. P. Lawson and C. T. Atkinson record an alternative which is also quoted by Grouvel. Red shakos with white lace. Blue dolmans richly ornamented. Buckskin

Left A hussar of the Legion with, inset, a side view of the shako showing the flat style peak; a shako according to C. C. P. Lawson without peak; and the red faced sabretache. **Right** Mounted rifleman showing, inset, the officer's shako.



Dragoons and joined the Reserve Cavalry under Sir John Moore. Their destination was to fight the French in Egypt.

They served with Abercromby but did not go into action until April 2 1801 when some of the mounted riflemen were despatched under Colonel Spencer to create a diversion at Rosetta. Three of the men deserted. In retaliation Hutchinson, who had now replaced the mortally wounded Abercromby, dismounted the remainder and sent them back to Aboukir where, on September 17 they were returned as having two captains, two subaltern officers, nine sergeants, a drummer, 150 men fit for duty, 11 sick, two detached.

The remainder of the regiment had remained in Ireland and the Egyptian detachment returned to them in the summer of 1802. It was sent to Portsmouth and was disbanded on September 28 of the same year.

Many of the individual officers, who had served with great courage during the Egyptian campaign, and included Major Wilson and Capitaine le Vicomte de Chollet de Hedanges, received the gold medal of the Order of the Crescent from the Sultan.

The uniform of the Mounted Rifles was a cylindrical red covered shako with a black peak and a plain brass front plate and with a black pleated turban. Black cockade with a white over red plume. Dark green 'habit-veste' with collar, half-lapels, pointed cuffs, turnbacks, shoulder straps and breeches scarlet. Yellow buttons. Black stock. Black half boots with steel spurs. Black cross belts. Light cavalry sabre with brass guard and scabbard. Carbines. It is thought the shabraques were green bordered with red.

The officers wore the same shako but slightly belled at the top with cords, tassels and lace of gold. Dark green cockade with gold border. White plume with a black base. Movable peak of pale green with a gold border (probable that the underneath of the peak was pale green). Same coat as troopers but with gold edging to collar, lapels and cuffs. A piping on the sleeve seams of gold and red mixed and similar piping in the back seams. Gold lace loops on the lapels. Gilded buttons. Gold epaulettes. Gold hussar-type knots and lace down the outside of the legs. Crimson waist sash worn over the coat. Hussar boots with gold edges and tassels. Black leather pouch belt edged with gold. Pouch lid black edged gold. Crimson leather sword belt and slings edged with gold. Black sabretache. Sabre in a steel scabbard. Dark green shabraque with a red border. In the front and rear corners the Royal Cypher under the Royal Crown. Brown leather bridle with silver studs.

Sources

The main source for this information is the excellent work by Vicomte Grouvel *Les Corps de Troupe de L'Emigration Francaise (1789-1815) Volume I — Service with Great Britain and the Low Countries*.

Further information was gathered from correspondence with the late C. C. P. Lawson and the informative articles by C. T. Atkinson in the *Journal of the Society of Army Historical Research*.

The drawings have had to be reconstructions from written material. As far as possible they reflect the normal type of uniform one would expect at that period. □



By Michael J. F. Bowyer and John D. Rawlings

NI 451 Squadron, RAAF (c)
When this squadron moved from the Middle East to the UK in November 1944 its code letters were changed from 'BQ' to 'NI', this combination being carried until disbandment in January 1946. Examples are Spitfire IX NI:Z-MJ833, XIV NI:W-NH923.

NJ Unknown
A 46 Group Dakota unit used this combination in 1945, eg Dakota III NJ:T-FL635.

NK 118 Squadron (c)
This squadron was formed at Filton in February 1941 and carried 'NK' on its Spitfires and Mustangs throughout the war and until disbandment at Horsham St Faith in March 1946. Examples are Spitfire IIA NK:H-P7913, VB NK:D-EN966, IX NK:N-ML249, Mustang IV NK:X-KH515.

NL 341 Squadron (c)
The Alsace Groupe de Chasse re-formed in the UK in January 1943 as part of the RAF, equipped with Spitfire VBs. In 1944 it became part of 2nd TAF and ended its war at Fassberg in November 1945 where it disbanded. All this time it was coded 'NL'. Examples are Spitfire IXB NL:M-PT657, LF XVIE NL:C-TD133.

NM 230 Squadron (c)
This code combination was used by 230 Squadron in the Mediterranean area during 1940-41. It was flying Sunderland Is and IIs, eg Sunderland I NM:V-N9079.

NM 268 Squadron (c)
Formed September 30 1940 as an Army Co-operation squadron, No 268 was based at Snailwell with Lysanders, Tomahawks and then Mustangs. It used the code combination 'NM' until the spring of 1943, after which no codes were used at all. One of the squadron's Tomahawk Is was NM:P-AH775.

NN 310 Squadron (c)
First of the Czech squadrons to form in the UK was No 310 which formed at Duxford on July 10 1940 and fought from there in the Battle of Britain with Hurricane Is. It remained in Fighter Command throughout the war, converting to Spitfires October 1941 and carried 'NN' on all its aircraft.

Examples are Hurricane I NN:B-V6608, Spitfire VB NH:E-BL517, LF IX NN:G-MH999.

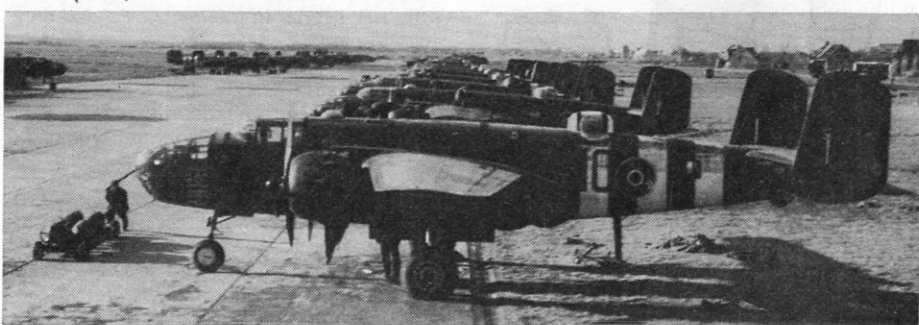
NO 320 Squadron (c)
This squadron, composed of Dutch airmen, brought Fokker T-8-W seaplanes to the UK when it escaped in May 1940. It is possible that they were temporarily coded 'TD'. However, these aircraft did not fit into Coastal Command's pattern and in August 1940 the squadron transferred to Anson Is at Silloth. These were coded 'NO' and succeeded by Hudsons in 1941 for operations from Leuchars and Bircham Newton. In March 1943 the squadron became a part of 2 Group, Bomber Command, and flew Mitchell IIs and IIs until the end of the war, disbanding in August 1945. Examples are Hudson I NO:Y-N7302, Mitchell II NO:S-FR142, III NO:A-HD392.

NP 158 Squadron (c)
This squadron served with 4 Group, Bomber Command, throughout its wartime service, forming at Driffield in February 1942 with Wellington IIs, converting to Halifax IIs in June 1942 and using successive marks of Halifax until disbanding at Lissett on May 7 1945. Examples are Wellington II NP:Z-W5562, Halifax II NP:S-DT700, III NP:M-MZ356, VI NP:K-RG593.

NQ 24 Squadron (c)
This code combination was assumed by 24 Squadron well on into the war (circa 1943) and appears to have been used only by its longer-range transport aircraft, eg Dakotas, Hudsons, Wellingtons and Yorks, and was used until at least 1946. Examples are Wellington C 1 NQ:D-NZ990, Dakota IV NQ:L-KP258.

NR 220 Squadron (c)
This squadron received Hudson Is in Coastal Command as World War 2 broke out and coded them 'NR'. This code combination was retained on successive Hudsons (Mk III, V) until Fortress IIs replaced Hudsons and the code was relinquished. Examples are Hudson I NR:F-N7295, V NR:D-AM815. □

A line-up of 'NO'-coded Mitchell IIs of 320 Squadron in December 1944, probably at Melsbroek (IWM).



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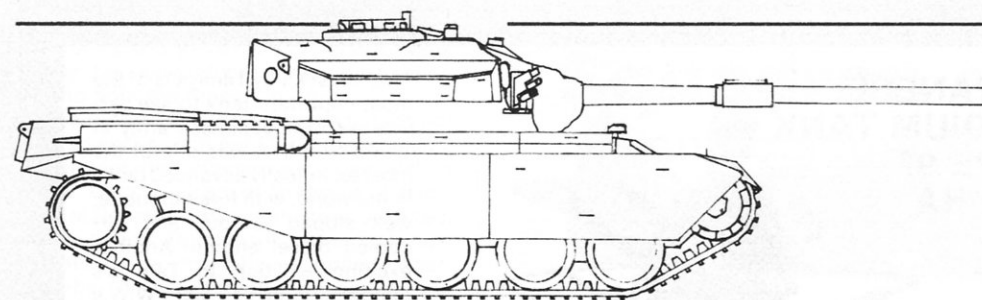
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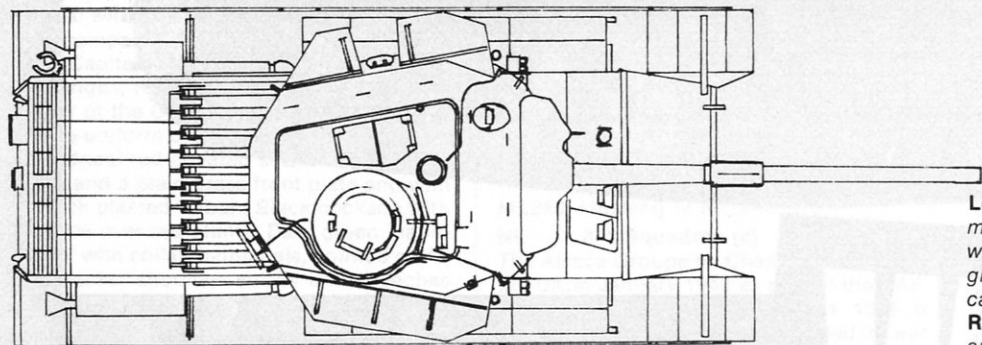


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Centurion Mk 5 in 1:76 scale

Conversion from the Airfix Mk 8 kit
described by **Jeremy Broughton**



THE CENTURION TANK entered service with the British Army in 1945 and, although no longer used by the British in a front line role, is still one of the most numerous and widely used battle tanks today. The Mark 3 was the first model to appear in large numbers, but the subsequent Mark 5 achieved the greatest production of any version, over 2,500 being exported in addition to many serving in the British Army; it is this Mark that we will be modelling.

The basis of the Mark 5 will be the Airfix Centurion Mk 8 Series 2 kit, but the work involved is greater than this suggests; the most drastic modification to the existing kit is the construction of a completely new turret, but in addition the hull needs lengthening, the engine covers must be remodelled and various lesser items added or altered. The hull will be dealt with first.

The hull side pieces, 19 and 21, are 2 mm too short, and to extend them first remove the central trio of track roller mountings, then divide each into three parts by vertical cuts between the mountings for the bogie units. Cement 2 mm wide strips of 40 thou plastic sheet to the cut faces of the central pieces then cement the outer sections in place, taking great care that they are accurately aligned. Add to each side an internal stiffener cut from 40 thou sheet, and when all joints are thoroughly set file down the projecting parts of the extensions. Now cut the hull bottom, part 20, into roughly equal front and rear parts, and cut the front part of the hull top, part 22, from the remainder along the angle immediately behind the driver's hatch. The hull sides, the two parts of the bottom and the front part of the top are now assembled; the rear part of the top can be used as a guide, but must not be cemented in position. A rectangle of 40 thou sheet, 60 x

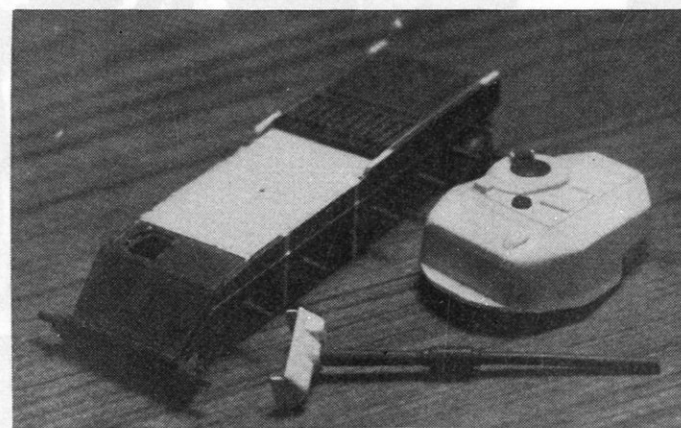
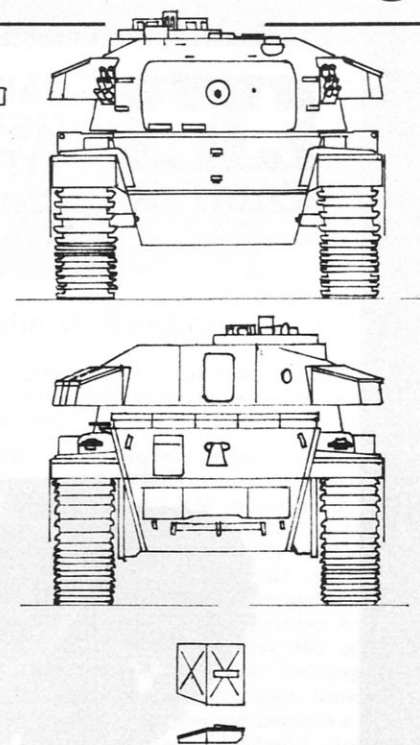
25 mm, is then mounted between the upper edges of the hull sides immediately behind the driver's hatch.

The engine covers are now produced. The fault in the covers as shown in the rear area of part 22 is that the 'hinges' are mounted too far forward, so that the troughs lying in front are too short and the panels behind are too long. Begin by cutting off the transverse wall and grille from the rear end of part 22, then remove the forward part to leave a rectangle 31 mm long that includes the original engine cover; now extend the troughs to the new forward edge, using strips of 30 thou sheet. Sand down the bottom face so that the unit is 1½ mm thick; it is now ready for mounting in place on the existing hull top. First the upper edge of both side pieces must be reshaped; the 'step' is moved rearwards and then the upper edges are filed down to be flush with the engine covers: the latter should be used as a guide. You will now find that in order to achieve the shape shown in the plans for the

rear upper hull, a triangle and a rectangle of 40 thou sheet must be added to the upper edge of each hull side to give a flat profile—a low wall around three sides of the engine covers will be added later. Also, as we will be providing a new rear plate in place of part 25, to fit between the hull sides, the adjacent areas of the hull sides should be extended rearwards. When all these additions are firmly set and the joints filed smooth the engine covers are cemented in place; strips of 5 mm sheet are used to fill the gaps between the covers and the hull sides.

The rear louvres are modelled next, and with care can be most convincing. Cut a 3 mm wide strip of 20 thou sheet to fit between the hull sides behind the engine covers, and along the lower edge cement a 2½ mm wide strip 2½ mm wide is then cemented to Short 20 thou strips are cemented to the vertical strip, narrow for the outer spacers and wider for the central spacer. A 5 thou strip 2½ mm wide is then cemented to

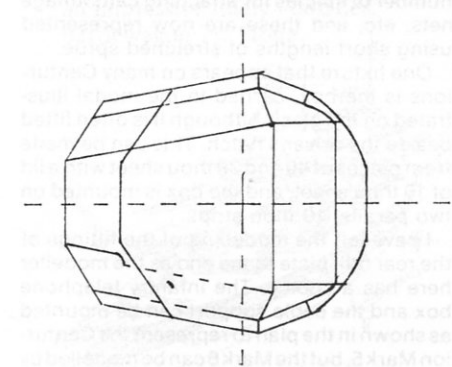
Left and above 1:76 scale plans for the model. Note the box, drawn separately, which should be mounted on the left of the glacis plate. A spare length of track is often carried on the right, in front of the driver. Right Plan view of the turret as it will appear before the shaping process.



The new turret can be seen here after the flat plates have been filed down to give the curved form of the cast turret. Notice the shape of the mantlet.

these; next another set of spacers is added, and the operation repeated until four sets of spacers are in place. It is helpful, during construction, to paint the lower areas of the louvres matt black and the upper areas with the model's final colour: the gaps are too narrow for the louvres to be properly painted after completion. The louvre unit is now mounted in place; the hull rear plate, from 20 thou sheet is then added, butting against the final set of spacers.

The next step is the addition of the track guards; first cut each in half and cement a 2 mm extension between the halves. They are then widened by cementing a 1 mm wide strip of 10 thou sheet along the outer edges and mounted on the hull sides. The stowage boxes can, as in the model illustrated, come from an enlargement of kit parts 90 and 91, but it is probably quicker to make them from scratch. The exhausts, parts 92 and 93, need little attention; the narrower part should be cut from the silencer/exhaust, a 2 mm exten-

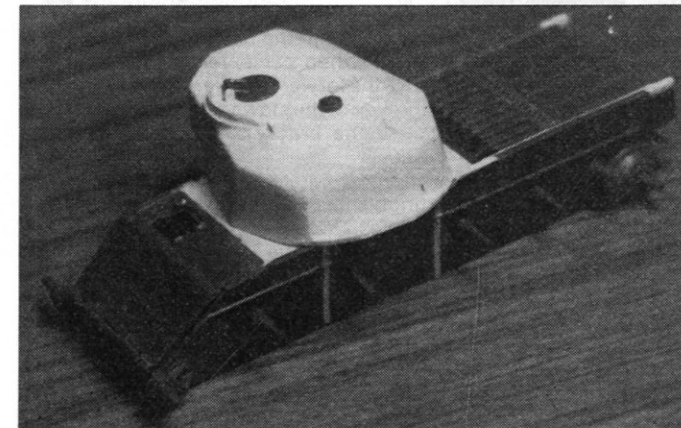


sion cut from sprue cemented to its rear and the separate pieces then cemented in place.

The suspension is now assembled as shown in the kit instructions and then, apart from a final detailing to be carried out later, the hull is complete. We turn next to the construction of a new turret.

The best method for constructing the turret is to start at the roof and work downwards. Most of the surfaces of the turret are to some extent curved, and this form is reproduced by making the turret from a series of flat pieces of 40 thou sheet which will, when assembled, be filed down to the correct curvature. A plan view of the turret is included as it will appear immediately before this filing down is begun. The flat central section of the turret roof is not shown, but the three sections of the rear wall below the bustle are included.

We start with the flat, irregularly shaped, part of the turret roof on which are the cupola and loader's hatch. It is surrounded by a



The model is almost complete, and the 'canvas' mantlet cover, from tissue paper, is clearly seen.

narrow channel, shown on the plan view as a double line; first cut a piece of 10 thou sheet to the shape of the inner line and a piece of 30 thou sheet to the outer line. Cement these together. Now cut a piece of 20 thou sheet to the profile of the turret; as all the turret sides will be 40 thou thick trim this amount from the profile, also 20 thou from the bottom edge to allow for the turret base. Similarly make two pieces to support the side walls: these will fit at 90 degrees to the respective walls. Next cut the turret base from 20 thou sheet and trim to allow for the thickness of the walls that will fit on to it: as the side walls will be sloping and not truly vertical allow 1¼ mm for these. These various pieces should now be cemented together, but care is needed to ensure that the roof and base are accurately aligned. Drill a hole at the centre of the base and cement a peg therein, projecting downwards, then drill a corresponding hole in the upper hull plate to mount the turret on the hull.

The rear part of the turret roof is the first piece to be added to the skeleton, followed by the rear turret face. Next add the sloping sides of the roof, allowing a generous overhang at the outer edge; the right-hand side is in two sections at different angles that meet under the cupola. As trigonometry would be needed to calculate the correct angles at the rear of these pieces, leave the rear ends square for the moment. Now cut out rectangular side walls and cement in place, then cement reinforcing strips along the inside of the joints. The floor of the turret bustle is formed next, and when its edges have been filed to fit between the turret sides it is mounted in place.

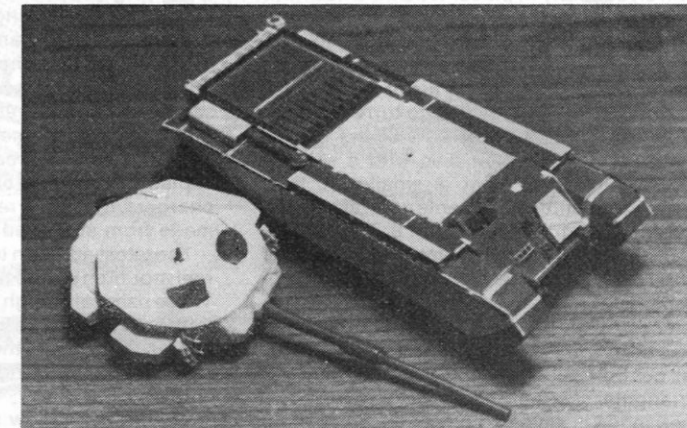
The remaining pair of rear walls are cut to

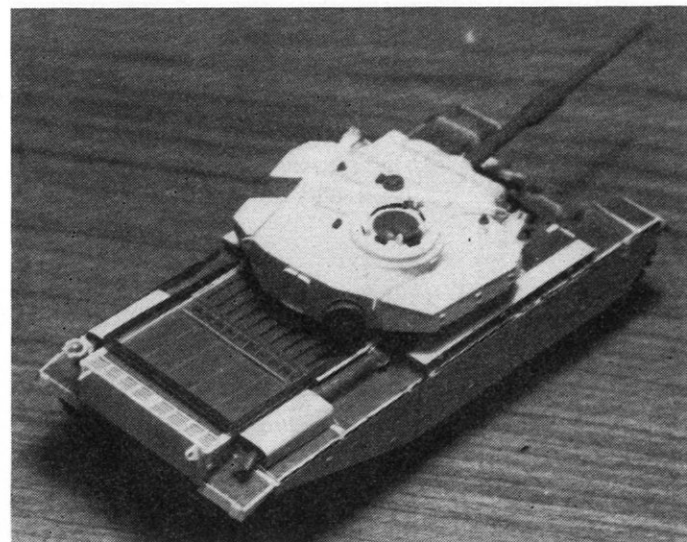
shape by trial and error in order to get a close fit and are then cemented inside the angle formed by the roof and sides. When the joints are thoroughly hardened the excess plastic from the roof and sides is cut away. The three lower rear walls are added next, after which the final trimming of the sides is carried out to complete the first stage in constructing the turret rear.

The sloping front of the roof is produced next, this time from 30 thou sheet. This area of the roof is mainly flat, but there is a shallow ramp at the rear edge. Accordingly, take a 2 mm wide strip of 10 thou sheet and file it to a triangular section, then cement it to the rear of the rectangular 30 thou plate and attach the plate to the turret's skeleton. Now cement a vertical rectangle of 40 thou sheet to the front of the turret, set against the front edge of the roof. Two triangles are needed to complete the roof, and two rectangles to fill the gaps in the side walls.

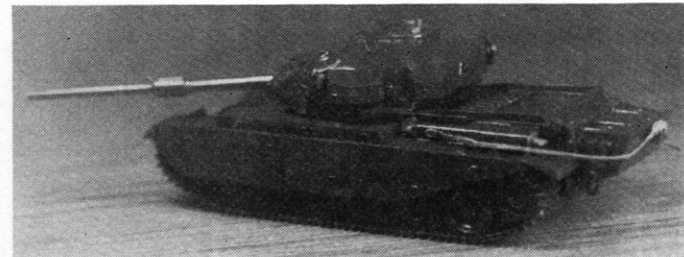
It is sometimes difficult to cement a reinforcing strip inside a newly formed joint, but whenever possible a 40 thou strip should be added as this strengthens the joint and will later reduce trouble when the excess plastic is filed away. This is good general practice, but is doubly important in the present case as

Below left The shape of the right-hand side of the turret is shown, also the extensions to the hull and the engine covers. **Below** This shows the irregularly shaped underside of the turret. The two holes were cut in order to add strengthening strips where the sides and roof meet. On the right of the glacis plate, opposite the stowage box, is the bracket, from stretched sprue, that would normally support the spare length of track.





Left Almost finished. Above Painted Mk 6 model with prominent rear fuel tank as described.



much plastic will be removed around the joints to reproduce the curvature of the cast turret.

The filing down of the 'ridges' of the multi-faceted turret so far produced to give the smooth curves of the final model now takes place, and it is advisable to proceed cautiously. The final shape can be seen in the various photographs, and generally the frontal curves are less sharp than the others.

There is a thickening of the turret sides just above the turret ring. This is modelled by cementing along the lower edge of both side walls a length of 2 mm wide 10 thou strip filed to triangular section, and when firmly set filing down any remaining ridge.

The area of the turret beneath the cupola base is now built up: by trial and error produce a D-shaped piece of 10 thou sheet that fits around the projecting curve of the flat roof and meets the sloping roof, then cement it in place. A little putty is pressed into the angle formed with the sloping roof which is later shaped to the required concavity.

The turret stowage boxes are constructed from 20 thou sheet. First cut out the bases to the shapes shown by the plan view, then trim away 20 thou from each edge to allow for the walls. All the walls, except for those facing the rear and the pair on the left-hand boxes that face each other, slope inwards at 80 degrees and so, using a protractor, cut out a series of small 80 degree triangles to support these walls at the correct inclination.

The boxes are assembled face-by-face; for the end faces it is best to concentrate on getting the angles correct, and only later file down the upper edges so that the box-lids will sit squarely in place. When the lids have been cemented in place file down the outer edges parallel with their box-sides to project slightly beyond these sides. The boxes are then attached to the turret sides.

The various fittings for the turret roof are now added. The lower part of the cupola consists of a 40 thou disc with a shallow projection at the front. A smaller 10 thou disc represents the movable central portion, on which is mounted kit part 9. The rail that surrounds the hatch cover is cut from 10 thou sheet; the raised central section protects a binocular periscope — from two pieces of stretched sprue — and there are two periscopes to the right and five to the left, all cut from a length of 30 thou strip filed to a triangular section. The plinth for the loader's periscope is also formed from a piece of 40

thou sheet. The fan is cut from part 7, as are the aerial bases, but the other details must be made up from plastic sheet.

The external mantlet is made next, from two rectangles of 40 thou sheet cemented at 90 degrees; a ring is cut from 40 thou sheet into which the gun barrel, part 3, fits. The ring is 1 mm wide and is cemented on to the angle of the mantlet: a concentric hole is then drilled through the mantlet and the barrel is cemented in place. The counterweight at the end of the barrel must be filed away, and the barrel then shortened slightly. The machine-gun mounting consists of a 2 mm square of 40 thou sheet cemented to the outer angle of the mantlet with two supporting wedges of putty: as the entire mantlet assembly will be concealed by a tissue cover great care is not needed at this stage. The machine-gun barrel is not mounted until the cover is in place.

Supports are added at either end of the mantlet to mount the mantlet assembly on the turret; carefully shape the rear of these supports until the relation between turret and mantlet is correct, then cement the supports to the turret front. The mantlet cover is now added from tissue paper; ordinary gum is used to achieve the correct shape.

The smoke grenade dischargers are made next, and although they appear complicated they are simply reproduced, each requiring three 2 x 4 mm rectangles of 40 thou sheet, and six 'barrels' from stretched sprue. Two barrels are cemented directly to one end of the uppermost rectangle; a shallow triangle is cut from one end of the next and two more barrels cemented to the cut edge of the remaining quadrilateral, and this is repeated for the lowest rectangle, the triangle being deeper. The rectangles are cemented together, and later the rear face is filed down to give a plane surface. The dischargers are carried on frames attached to the turret. Build up these frames from 10 thou strips, and when firmly set cement the dischargers in place. Prominent cables connect the dischargers to the turret roof, and these are made from stretched sprue.

The latest addition to the turret is the cable reel mounted on the turret rear. Parts 16 and 17 are used, although 17 must be trimmed to reduce the depth of the unit. There is also a cable running from the base of the reel to the rear of the cupola, and again stretched sprue is used.

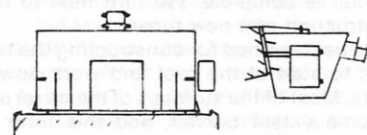
The model is now almost complete, and

the side shields are the last major item needed. A pair of shields are cut from 10 thou sheet, and the inner faces bevelled so that the visible edges are about 5 thou wide. Seven attachment points, narrow 10 thou strips, are cemented to the outer edge of each track guard and the shields are mounted on these. Two supports are then fitted on either side between the lower edge of the shield and the hull.

The Centurion is equipped with a large number of staples for attaching camouflage nets, etc., and these are now represented using short lengths of stretched sprue.

One fixture that appears on many Centurions is the box, carried in the model illustrated on the glacis although it is often fitted beside the driver's hatch. This can be made from pieces of 40 and 30 thou sheet with a lid of 10 thou sheet, and the box is mounted on two parallel 10 thou strips.

I have left the modelling of the fittings of the rear hull plate to the end as the modeller here has a choice. The infantry telephone box and the cable support can be mounted as shown in the plan to represent the Centurion Mark 5, but the Mark 6 can be modelled by adding the large external fuel tank drawn in the plans: the model illustrated is of the Mark 6. The tank is made up from 10 thou sheet and is carried from the hull rear by four sets of brackets.



The model is now ready for painting. The Centurion has been used by many armies in a wide range of areas, so there is a great variety of colour schemes available. My model represents a normal British Mark 6, and I used overall deep bronze green.

Centurions are generally equipped with a pair of steel towing hawsers, and these can be represented using thick thread. They are in the form of an elongated figure 8, a double cable with a loop at either end, and the double cable is formed using ordinary gum. When the gum has set trim off projecting hairs and paint the hawsers with gunmetal. They are then cemented in place; on the Mark 5 the forward ends are fixed to brackets at the rear of the stowage boxes, but with the Mark 6 the brackets are attached to the exhausts.

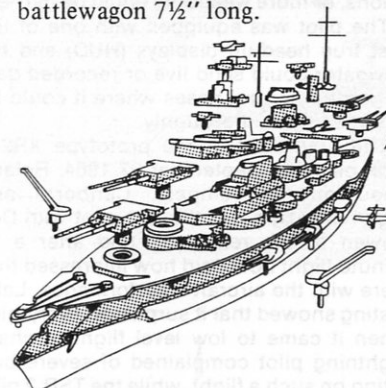
The final details to be added are the fire extinguishers carried on the front of the turret boxes. One quick way of producing these is to use two of the axles earlier cut from the hull sides; when they have been filed to shape, paint them dark blue and cement in place.

The construction of the model is complete, and you may now wish to convert the model's 'factory finish' to the scuffier condition often seen in service.

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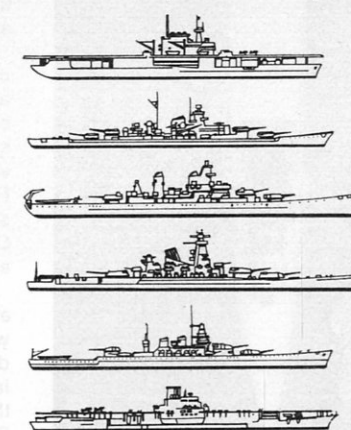
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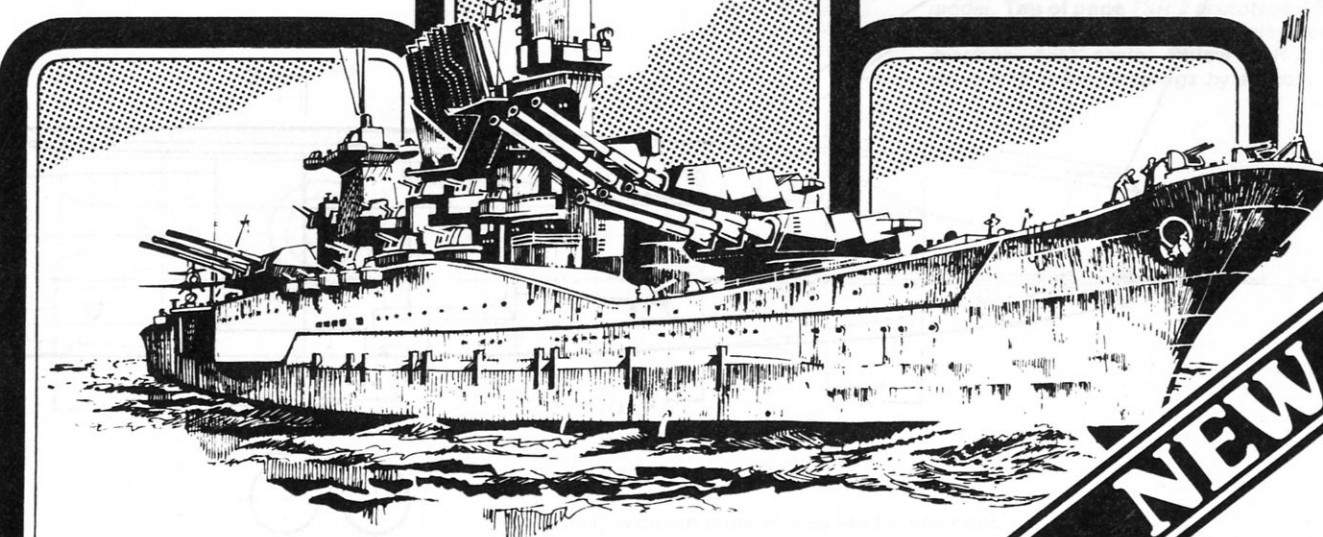


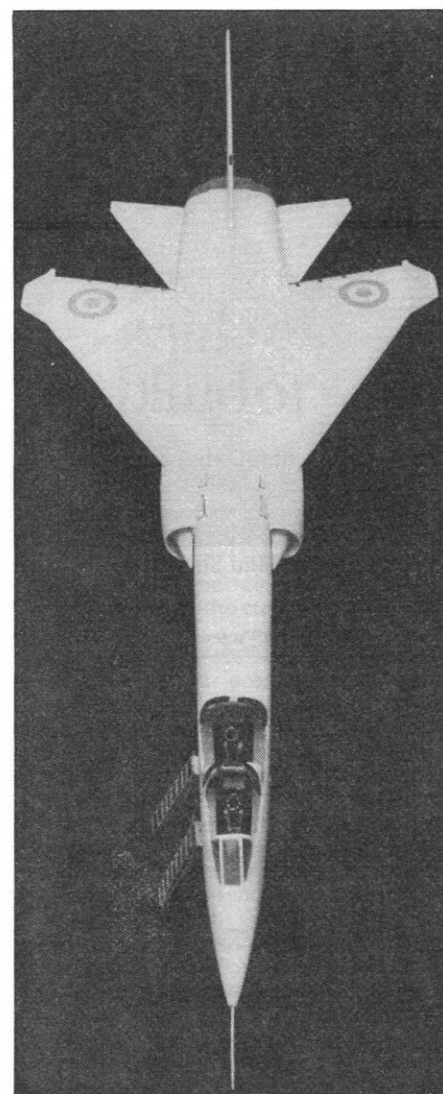
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TSR 2

Scratch-building project in 1:72 scale from **Tim Perry**

THE TSR 2 WAS undoubtedly the most highly advanced aircraft of its time. Designed as a Canberra replacement, it was based on the contents of General Operational Requirement 339 which was for a low level strike and reconnaissance aircraft with highly advanced navigational and weapon delivery equipment, high performance at very low level (Mach 1 at 200 feet) to escape enemy radar, long range, STOL, rough field capability, a 6,000 lb bomb load carried internally and in-flight refuelling; it can be seen this aircraft was to have been an exceptional machine indeed.

It was decided that no single company could cope effectively with such a project and so English Electric and Vickers Armstrong, both of whom had submitted very similar designs, were amalgamated along with several other firms, and renamed the British Aircraft Corporation. In 1959 specification OR 343 was issued and in October 1960 an order for development aircraft was made with BAC.

The TSR 2 now took on a definite shape; a large needle-shaped plane with a high flat wing with a 60 degree sweep, tips turned down 30 degrees for supersonic stability, large tail surfaces providing control in all three axes (yaw, pitch and roll). Two Bristol Siddeley Olympus 22R turbojets each producing 33,000 lb of thrust provided the power for this aircraft; developments of these engines propel the Concorde.

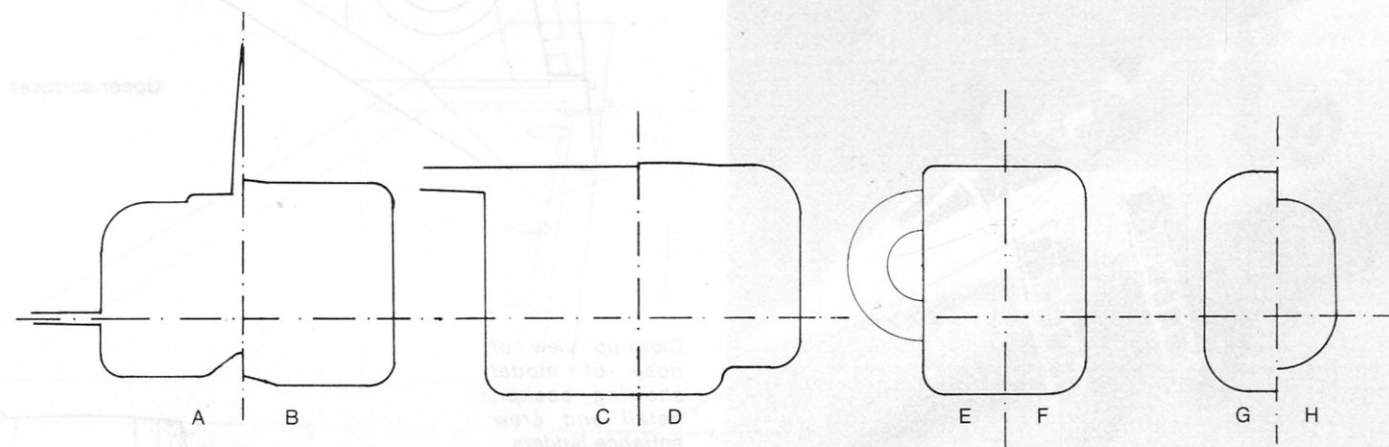
The fuselage was tipped with a supersonic-birdstrike-resistant radome which covered a forward-looking radar designed by Ferranti; this equipment acted in the terrain avoidance role, while two seven-foot-long aerials under the rear cockpit provided a sideways-looking radar system,

designed by EMI, second to none. Behind the rear cockpit in a pressurised bay were stored all the various computers, data stores for the nav-attack and terrain-following equipment, underneath which was a battery of vertical and oblique cameras, the radar altimeter and the inertial navigation platform. The bomb bay could be fitted with either a bomb load, more fuel tankage or more advanced reconnaissance equipment. More fuel could have been carried on underwing pylons, or more weaponry could be carried.

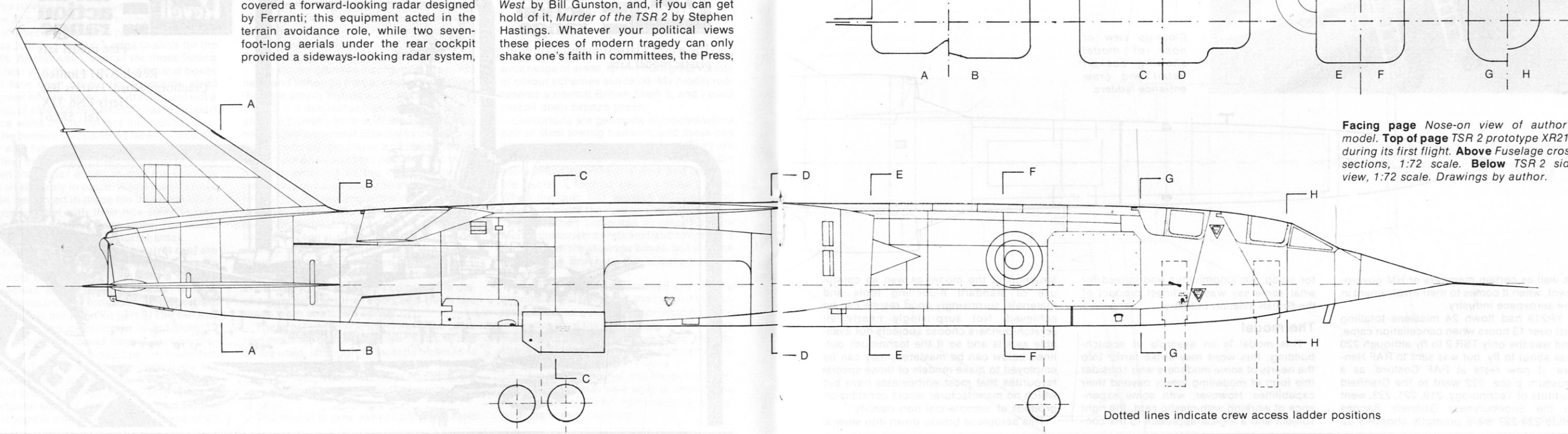
The pilot was equipped with one of the first true head-up displays (HUD) and the navigator could send live or recorded data to ground control bases where it could be analysed more thoroughly.

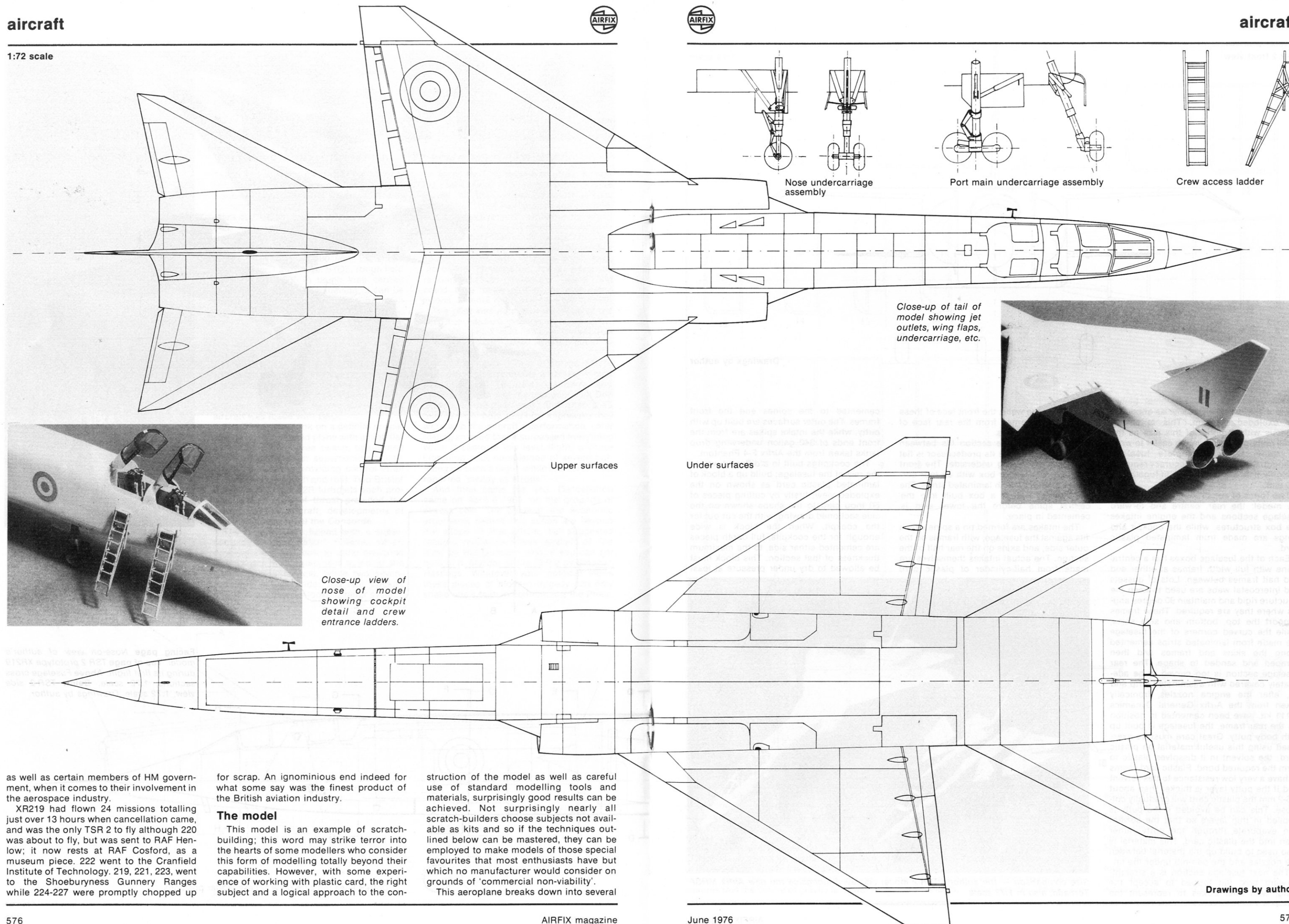
The first flight of the prototype XR219 took place on September 27 1964. Roland Beaumont of Tempest, Canberra and Lightning fame was the test pilot with Don Bowen in the rear seat, and after a 15 minute flight both said how impressed they were with the aircraft's performance. Later testing showed that it surpassed everything when it came to low level flight; a chase Lightning pilot complained of severe buffeting on such a flight, while the TSR 2 pilot reported 'steady as a rock'.

And then came the end. Cancellation came on April 6 1965, on the grounds of excess cost. The political and economic arguments behind this action are beyond the scope of this article, but suggested reading matter is *Attack Aircraft of The West* by Bill Gunston, and, if you can get hold of it, *Murder of the TSR 2* by Stephen Hastings. Whatever your political views these pieces of modern tragedy can only shake one's faith in committees, the Press,



Facing page Nose-on view of author's model. Top of page TSR 2 prototype XR219 during its first flight. Above Fuselage cross sections, 1:72 scale. Below TSR 2 side view, 1:72 scale. Drawings by author.





as well as certain members of HM government, when it comes to their involvement in the aerospace industry.

XR219 had flown 24 missions totalling just over 13 hours when cancellation came, and was the only TSR 2 to fly although 220 was about to fly, but was sent to RAF Henlow; it now rests at RAF Cosford, as a museum piece. 222 went to the Cranfield Institute of Technology. 219, 221, 223, went to the Shoeburyness Gunnery Ranges while 224-227 were promptly chopped up

for scrap. An ignominious end indeed for what some say was the finest product of the British aviation industry.

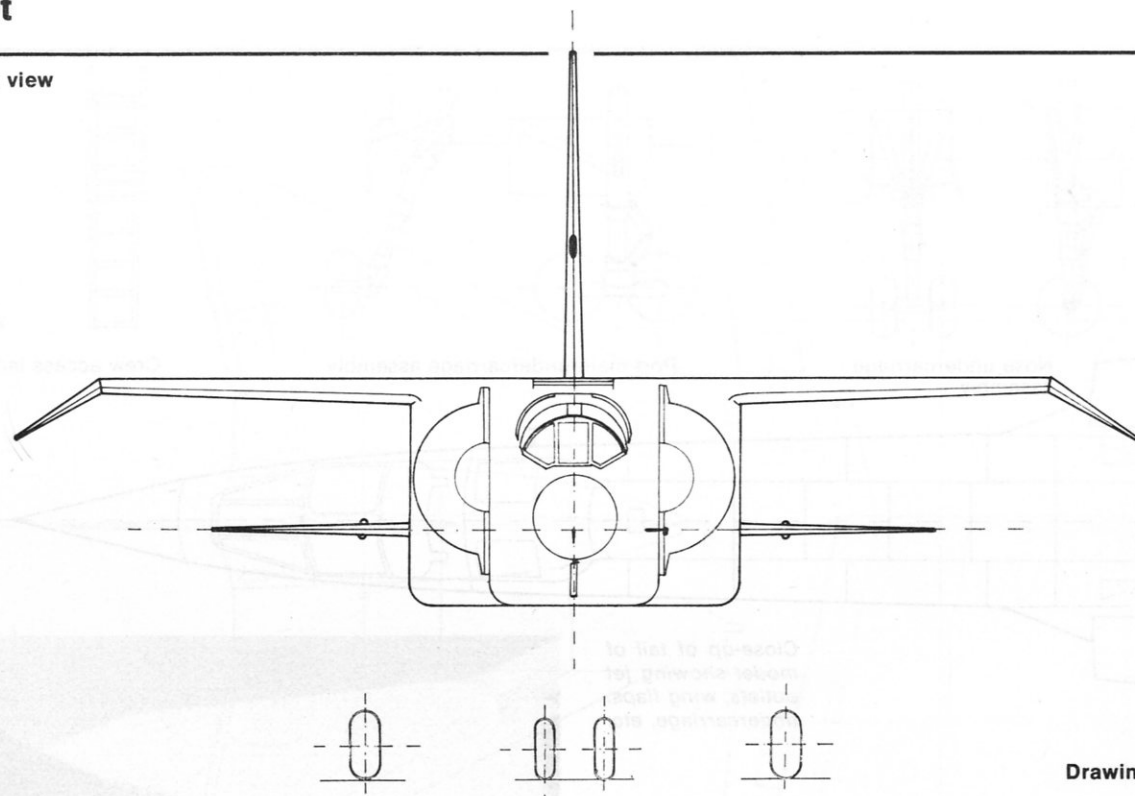
The model

This model is an example of scratch-building; this word may strike terror into the hearts of some modellers who consider this form of modelling totally beyond their capabilities. However, with some experience of working with plastic card, the right subject and a logical approach to the con-

struction of the model as well as careful use of standard modelling tools and materials, surprisingly good results can be achieved. Not surprisingly nearly all scratch-builders choose subjects not available as kits and so if the techniques outlined below can be mastered, they can be employed to make models of those special favourites that most enthusiasts have but which no manufacturer would consider on grounds of 'commercial non-viability'.

This aeroplane breaks down into several

Drawings by author



Drawings by author

components relatively easily, as shown in the exploded diagram. This is advantageous with a model of this size as the small components are much easier to work on rather than a complete fuselage although the standard of accuracy required is higher if all the parts are to fit together at the end.

Two forms of construction were used on my model; the rear, centre and forward fuselage sections and the engine intakes are box structures, while the cockpit and wings are made from laminated plastic card.

Each of the fuselage boxes has a central spine with full width frames at either end and half frames between. Lots of gussets and intercostal webs are used to keep the structure rigid and maintain 90 degree angles where they are required. These frames support the top, bottom and side skins, while the curved corners of the fuselage are made from laminated strips cemented along the skins and frames and then scraped and sanded to shape. The rear fuselage section is too curved to be adequately covered with a laminated strip and so, after the engine nozzles, ironically taken from the Airfix General Dynamics F-111 kit, have been cemented in position on the rear frame, the fuselage is built up with body putty. Great care must be exercised using this useful material on plastic card; the solvent in it dissolves plastic to form the required bond. Plastic card seems to have a very low resistance to this solvent and if the putty layer is thicker than about 1.5-2 mm the plastic card will gradually collapse. This can be avoided if the putty is applied in thin layers so that the solvent can evaporate through the putty rather than into the plastic card. This material is also used to build up the material between the nozzles and the pen-nib under the fin.

The next fuselage section is a straight-forward box, flat topped to accept the wing, with inlet boxes to represent the

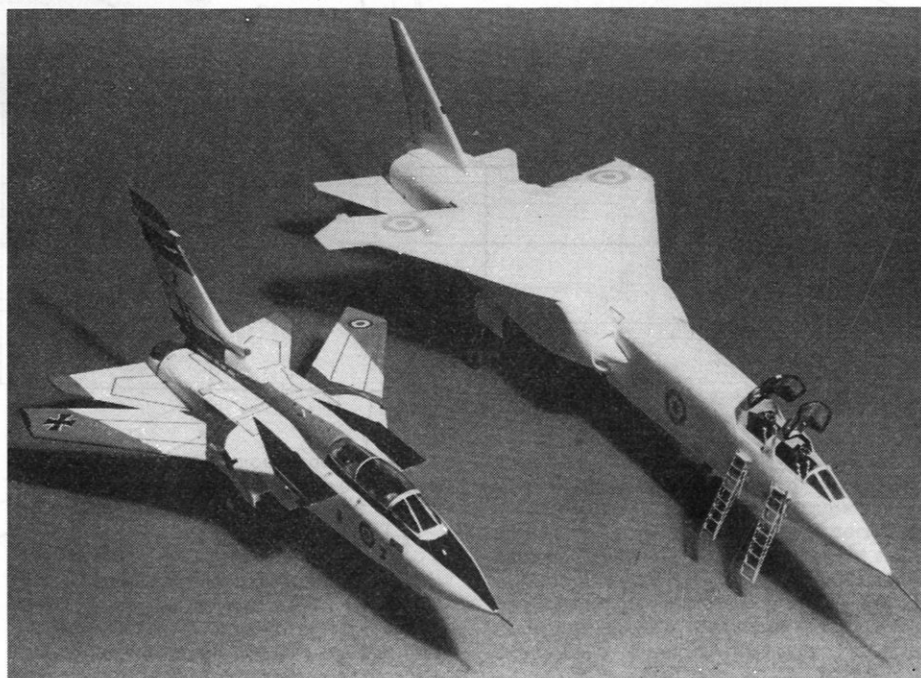
undercarriage wells, the front face of these wells being formed from the rear face of the intake structures.

The next fuselage section fits between the intakes, and like its predecessor is flat topped for the wing underside. The front fuselage is a longer box with all four corners rounded off with laminated strips. The nose wheel well is a box built into the central spine before the lower skin is cemented in place.

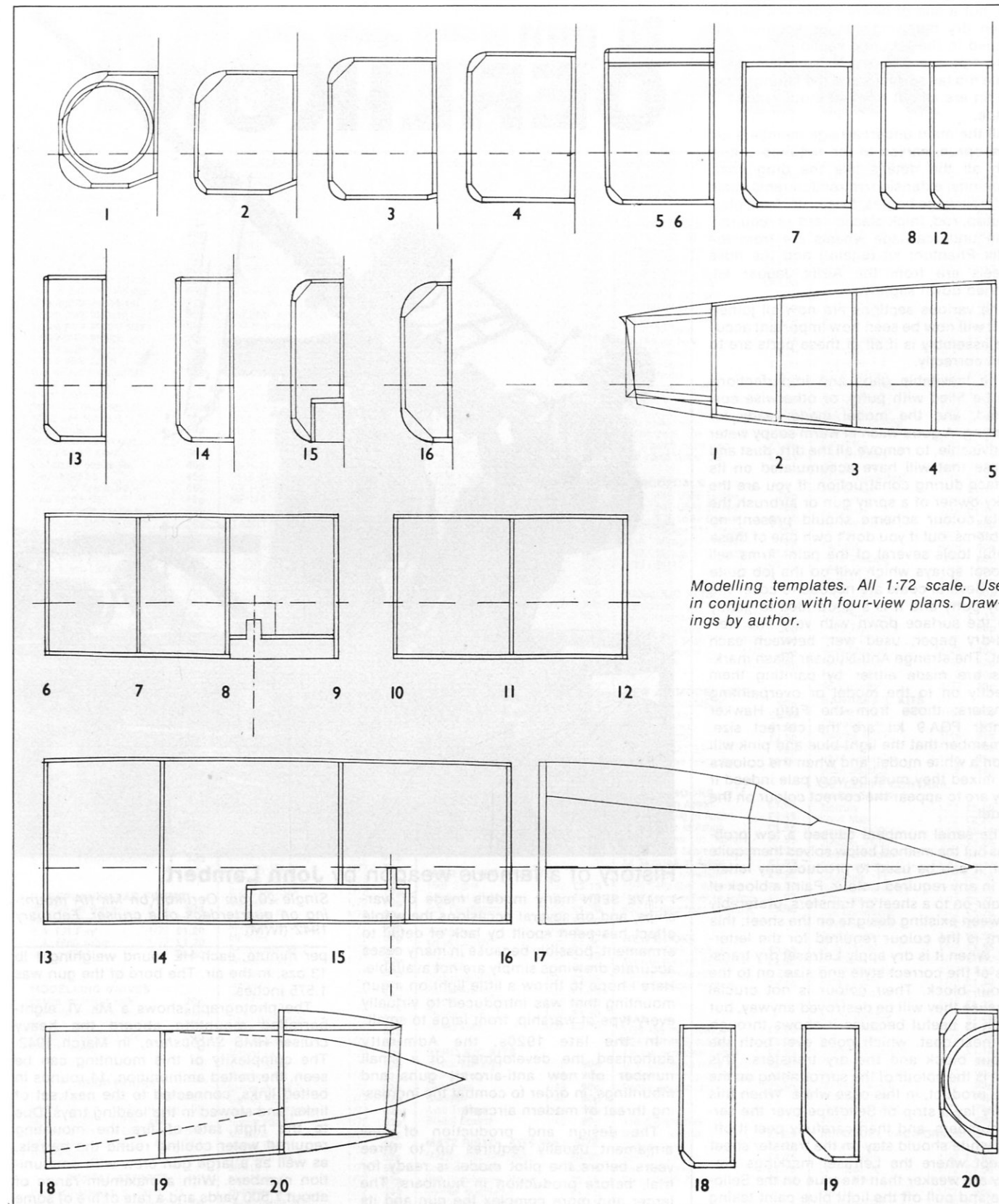
The intakes are formed on a spine which fits against the fuselage, with frames on the outer side, and skins on the rear half of the section. The actual intakes themselves are made from half-cylinder of plastic card

cemented to the spines and the front frames. The outer surfaces are built up with putty, while the intake spikes are from the front ends of 340 gallon underwing drop tanks taken from the Airfix F-4 Phantom.

The cockpit is built in a different way to the rest of the fuselage; build up a block of laminated plastic card as shown on the exploded view; firstly by cutting pieces of 60 thou card to the shape shown on the side sectioned drawing, with the cut-out for the cockpit. When the block is wide enough for the cockpits, full depth pieces are cemented either side, to the maximum thickness of that section. This block must be allowed to dry under pressure at least



Size comparison — the author's TSR 2 model displayed alongside the new Airfix MRCA Tornado, also in 1:72 scale.



Modelling templates. All 1:72 scale. Use in conjunction with four-view plans. Drawings by author.

overnight after which it can be carved to shape, making constant checks with the preceding fuselage section, the drawings and the photographs. This method of construction allows a finer control over the subtle curves which would be very difficult to reproduce with a structure like the rest of the fuselage, which is relatively simple in shape. Also the large mass of plastic ensures that the centre of gravity is forward

of the main undercarriage.

The radome can either be taken from a suitable droptank or, as I did, made up from another block of laminated plastic card. The windscreen was taken from the Hasegawa BAC F6 Lightning kit, trimmed slightly to the right shape. Cockpit detail is added at this stage, including instrument panels borrowed from spare Model-decal sheets, while ejector seats are

adapted from Airfix Phantom kit parts. The rest of the cockpit canopies and the arch between the canopies is moulded in one piece using the plastic card/clear sheet method outlined in my MiG 21 article (*Airfix Magazine*, December 1975).

The wings are made from a laminate of four pieces of 40 thou cemented together and allowed to dry under pressure; a woodworking vice is a useful tool for this



job, but a pile of heavy books will suffice. When dry the wing can be scraped and sanded to the required shape. Flaps and wing tips are also made from laminates, while the tail surfaces and the fairing under the fin are all cut from 40 thou, sanded to shape.

All the main undercarriage members are from sprue, carved to the required shape, with all the details like the drag links, trunnions, extension/retraction rams, main undercarriage bogies, axles, etc., from plastic strip, rod, thick plastic card as required. Main undercarriage wheels are from the Airfix Phantom kit (again!) and the nose wheels are from the Airfix Jaguar kit, thinned down slightly.

The various sections are now all joined up; it will now be seen how important accurate assembly is if all of these parts are to align correctly.

The inevitable gaps and imperfections can be filled with putty, or otherwise corrected, and the model made ready for painting. A good wash in warm soapy water is advisable, to remove all the dirt, dust and grease that will have accumulated on its surface during construction. If you are the lucky owner of a spray gun or airbrush the white colour scheme should present no problems, but if you don't own one of these useful tools several of the paint firms sell aerosol sprays which will do the job quite well. Several coats are needed to cover the body putty and it is a good idea to gently rub the surface down with very fine wet-and-dry paper, used wet, between each coat. The strange Anti-Nuclear Flash markings are made either by painting them directly on to the model or overpainting transfers; those from the Frog Hawker Hunter FGA 9 kit are the correct size. Remember that the light blue and pink will be on a white model, and when the colours are mixed they must be very pale indeed if they are to appear the correct colour on the model.

The serial numbers caused a few problems but the method below solved them quite well; it can be used to produce any lettering in any required colour. Paint a block of colour on to a sheet of transfers, preferably between existing designs on the sheet; this paint is the colour required for the lettering. When it is dry apply Letraset dry transfers of the correct style and size, on to the colour block. Their colour is not crucial because they will be destroyed anyway, but black is useful because it shows through the next coat, which goes over both the colour block and the dry transfers. This coat is the colour of the surrounding on the final product, in this case white. When this is dry lay a strip of Sellotape over the serial numbers, and then carefully peel it off. The white should stay on the transfer sheet except where the Letraset markings are; they are weaker than the glue on the Sellotape and pull off the light blue paint taking the white paint directly above with them. This leaves behind a white block with the serials in the required colour; they can then be cut out and applied like normal transfers.

Other painting details include the undercarriage, pale grey with metal details, natural metal on the rear fuselage and wing flaps. All the stencils and warning markings are in the pale pink colour used for the national markings. □



History of a famous weapon by John Lambert

I HAVE SEEN many models made of warships, and on several occasions the whole effect has been spoilt by lack of detail to armament, possibly because in many cases accurate drawings simply are not available. Here I hope to throw a little light on a gun mounting that was introduced to virtually every type of warship, from large to small.

In the late 1920s, the Admiralty authorised the development of a small number of new anti-aircraft guns and mountings, in order to combat the increasing threat of modern aircraft.

The design and production of new armament usually requires up to three years before the pilot model is ready for trial, before production in numbers. The larger and more complex the gun and its mounting, sighting equipment, fire control, etc., the longer the construction time of a single mounting or turret.

These new designs resulted in the further development of the 2 pdr pom-pom which dated from World War 1. Thus updated single gun mountings, as well as multiple pom-poms of four or eight guns were very slowly introduced. These multiple mountings had a very high rate of fire for the time. Each barrel fired approximately 115 rounds

per minute, each HE round weighing 1 lb 13 ozs, in the air. The bore of the gun was 1.575 inches.

The photograph shows a Mk VI, eight-barrelled mounting aboard the heavy cruiser HMS *Shropshire*, in March 1942. The complexity of this mounting can be seen, the belted ammunition, 14 rounds in belted links, connected to the next set of links, and stowed in the loading trays. Due to the high rate of fire the mounting required water cooling round the barrels, as well as a large gun crew with ammunition numbers. With a maximum range of about 7,500 yards and a rate of fire of some 920 rpm, the mounting was soon nicknamed 'The Chicago Piano'.

The size and weight of these mountings meant that they could only be mounted in large warships, where an additional risk came in the shape of the gun blast from the ships' heavier main armament. Destroyers were also fitted with the quad mounting which was lighter, but still lacked fire control equipment.

Continued on page 582

MODEL MARK

PAINTS/FINISHES

Humbrol authentics	15p
Humbrol standards	14p
MekWeld liquid glue	30p
Modelthin thinners	18p
Maskol liquid masker	45p
Testers Glosscoat spray	40p
Testers Dulcoat spray	40p
Rub 'N Buff silver	90p
Rub 'N Buff gold	90p
Rub 'N Buff olive bronze	90p
Rub 'N Buff metallic blue	90p
Liqu-a-plate aluminium	90p
Liqu-a-plate titanium	90p
Liqu-a-plate anodic grey	90p
Liqu-a-plate bronze	90p
Liqu-a-plate exhaust	90p
Liqu-a-plate sealer	90p
Green Stuff body putty	90p
Micro Flat varnish	50p
Micro Gloss varnish	50p
Micro Sol decal set	50p
Micro Set decal set	50p
Micro thinner	50p
Micro Weld liquid glue	50p
Micro Kristal Klear	50p
Half round needle file	45p
Flat needle file	45p
Triangular needle file	45p
Oval needle file	45p
Araldite Rapid adhesive	45p
Quicksand sanding block	30p
Clear Plastic sheeting	30p
Green Lichen pack	20p
Red Lichen pack	20p
Light Green Lichen pack	20p
Orange Lichen pack	20p
Natural Grey Lichen pack	20p
Autumn Tints Lichen pack	20p
Brick plasticard sheet	26p
Stone plasticard sheet	26p
Slate plasticard sheet	26p
Random Stone plasticard	26p
Wood plank plasticard	26p
Corrugated plasticard	26p
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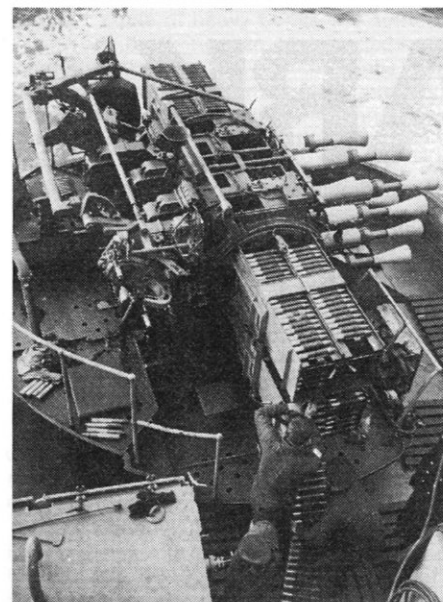
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PYRO A/C KITS



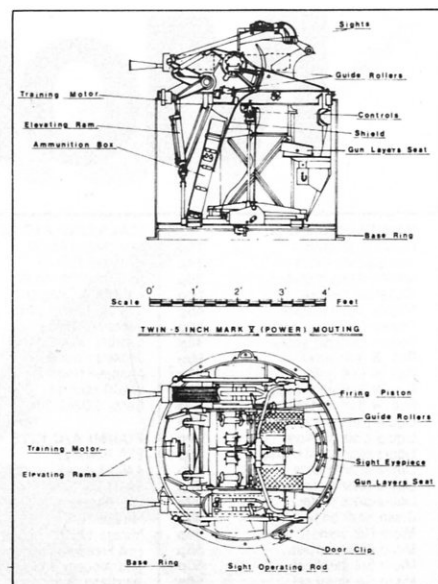
Above Eight-barrel pom pom on HMS Shropshire, March 1942 (IWM). **Below** Twin 4-inch guns on HMS Mauritius off Anzio (IWM).



Another design introduced was the quad .5-inch machine-gun, a much lighter mounting with an even higher rate of fire, but using lighter ammunition (1.32 oz) at approximately 700 rpm for each barrel (total 2,800 rpm). The effective range of this mounting was only 1,500 yards maximum. Each gun had a 200 round drum feed magazine for its belted ammunition.

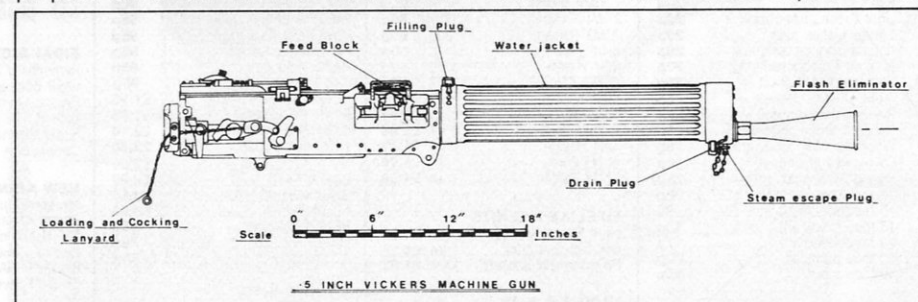
War experience was to prove that the .5-inch round was too light to bring down modern aircraft, unless they were hard hit, and these mountings could only be mounted to warships of corvette size upwards. This being the position, coastal forces had nothing more powerful than light machine-guns then available, a power-operated twin .5-inch turret, or lighter weapons such as the .303-inch Lewis gun dating from the previous war, or the single or twin .303-inch Vickers gas-operated gun, which was in limited production (also issued one per submarine).

From 1933 another dual-purpose anti-aircraft weapon was to come into production, the Mk XIX gun mounted in the Mk XIX mounting. This was to become the main armament of the 'Black Swan' class sloops, and these were the heaviest armed warships for their size of any navy in the world. Later they also were the main dual purpose armament for the 'Hunt' class



As can be seen, there was a gap in effective close range armament, particularly for small ships, and this is how it was resolved.

In 1923, the 'Magdeburger Werkzeugmaschinenfabrik of Switzerland', took over almost the whole share capital of the

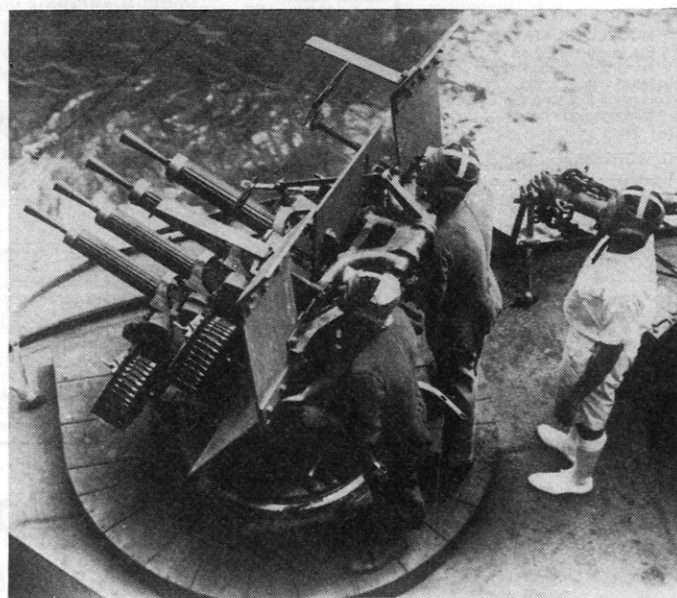


destroyers, as well as a number of Fleet destroyers in the Tribal and 'L' classes. This mounting was also the secondary armament of many of our modern cruisers.

This mounting, though heavy, was very successful, with a later mark number, much modified, still in use today aboard HMS *Mermaid*. The twin 4-inch can still be seen aboard HMS *Belfast*, moored in the Pool of London.

'Schweizerische Werkzeugmaschinenfabrik' (Swiss Machine Tool Works) that had been founded in 1906. In January 1924 the now parent company sent Mr Emil Georg Buhle to Oerlikon, to examine the position of that company, and to work out ideas for reorganisation. As a result, in the summer of 1924, Mr Buhle was appointed Manager with a staff of 80 men.

Now that the company was in foreign



Right Quad .5-inch machine-gun mounting on HMS Edinburgh in August 1941 (IWM).

ownership, the title 'Schweizerisch' (Swiss) was dropped, and the company became the 'Werkzeugmaschinenfabrik Oerlikon' (Oerlikon Machine Tool Works). The parent company took over the development of the 20 mm 'Becker Gun', from the Maschinenbau AG Seebach company, then in liquidation, who in their turn had been developing the new idea since the end of World War 1.

Mr Buhle envisaged that the new inertia-operated blow back system was capable of further development. The new company took over from Seebach all the patents covering the 20 mm Becker gun, with a prototype anti-tank gun, as well as the technicians. By Christmas 'Oerlikon' had obtained the first orders for this new weapon from Finland and Mexico.

In 1929 was to come the first large order, 120 guns for Chiang Kai Shek's National Chinese Government. Five years later Oerlikon obtained their first large European order from Lithuania, and others from Czechoslovakia, Argentina, and Japan.

In 1937 the British Admiralty became interested. Development work for this order took two years, and was to become our 20 mm Oerlikon Mk I mounting. When war was declared in September 1939, production for the UK had just begun. The contract was for 1,500 guns, but only 109 were to reach the UK before the fall of France.

After the Sudeten crisis of 1938, France had placed large orders for the 20 mm gun, with ammunition, as had Holland, and this additional work load required the parent factory to increase the size of its factory, as well as to sub-contract work.

By late 1939 the Swiss Army possessed 36 20 mm Oerlikon guns, and the production of some 500 guns had been to 28 different countries.

Now to turn to the British interest in the matter.

In 1935 an Austrian, Mr Antoine Gazda, joined forces with Oerlikon as a salesman for the new weapon. He obtained the large

order for Japan. On his return, he came to England, bringing with him a very impressive film of the gun in action. This film was seen by Lord Louis Mountbatten, who was to become a disciple. Within a week, arrangements had been made to have Mr Gazda lecture a number of senior officers and show off the potential of the weapon. Unfortunately he lost his voice, and Lord Louis took over the film and demonstration.

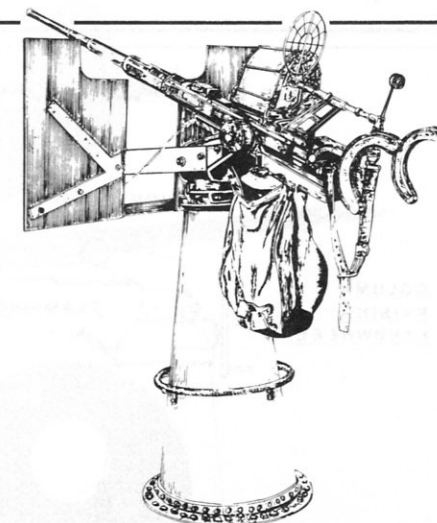
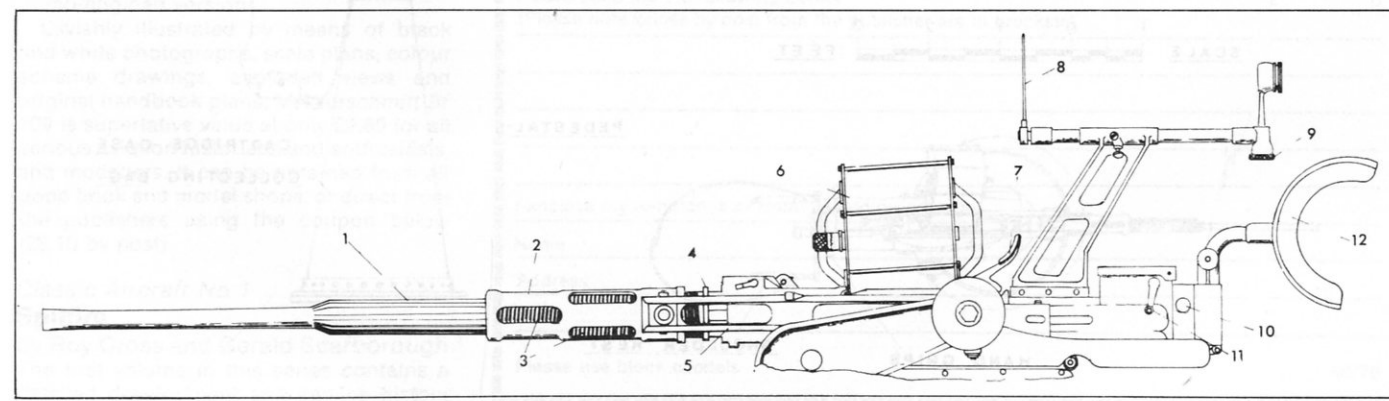
It is fair to say that the new 20 mm gun had one drawback concerning the safety regulations in the Royal Navy. Its breach mechanism did not lock and seal before firing, and this was to prove bad for its image. The Admiralty had already spent sums of money on new ordnance, and no more was available.

Throughout 1937 and 1938 Lord Louis waged a lone campaign to get the gun introduced for naval service. There were many meetings and committees as well as demonstrations (over 200). Finally a 20 mm cannon was mounted aboard a new MTB undergoing trials at Portsmouth. This came to the notice of Admiral Sir Roger Backhouse, the C in C Home Fleet, and with his report an order was made for delivery from Oerlikon.

The Admiralty, once they had made up



Key to 20 mm Oerlikon gun drawing below.
1 Cooling vanes (omitted from later guns). 2 Barrel spring casing. 3 Barrel springs. 4 Buffer. 5 Breech bar. 6 Magazine. 7 Magazine catch lever. 8 Sight (200 knot). 9 Range setting wheel. 10 Hand grip. 11 Trigger. 12 Shoulder rest.



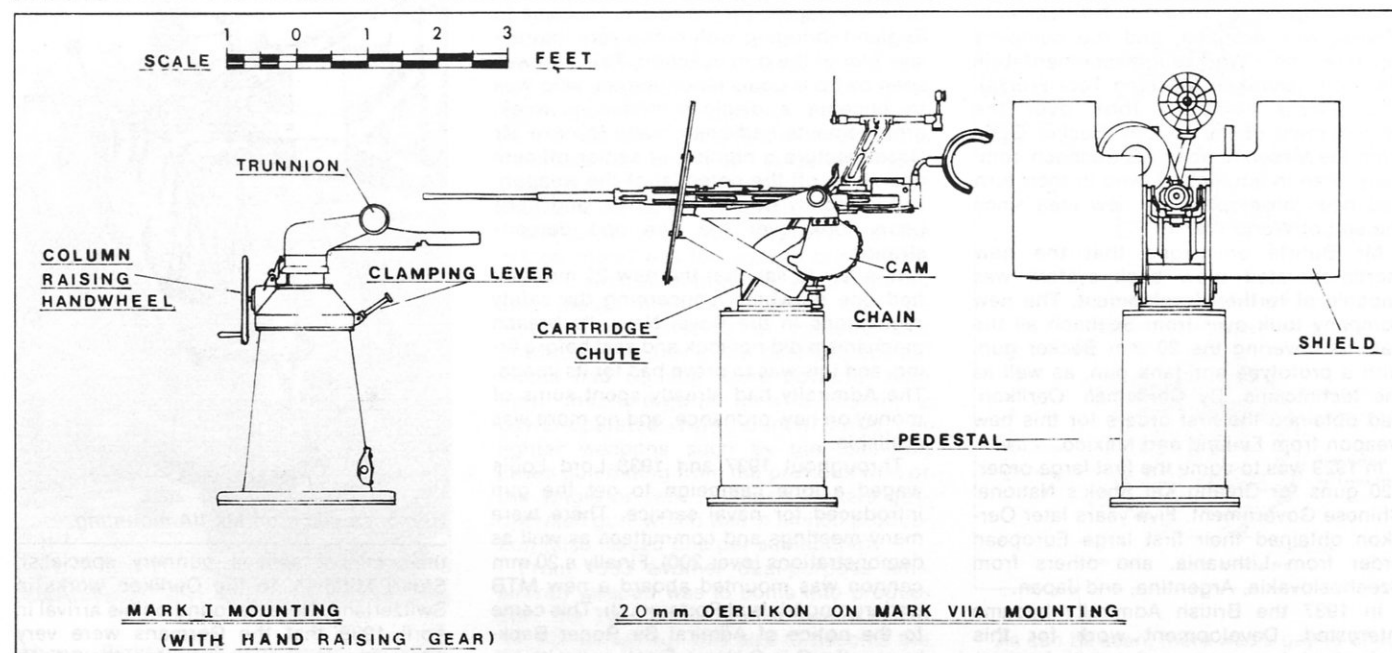
20 mm Oerlikon on Mk IIA mounting.

their minds, sent a gunnery specialist, Stuart Mitchell, to the Oerlikon works in Switzerland. Here he found on his arrival in April 1939 that the Germans were very interested in the weapon for their Luftwaffe. The factory at Zurich was thus turning out guns and ammunition for both sides. The steel for the barrels and recoil

MTB showing twin .5-inch machine-gun on a Mk V powered mounting, with twin Lewis .303-inch machine-gun mounting forward (IWM).

springs came from Germany, who knew of the Royal Navy's interest, but no attempt was made to hamper the British contract.

By early June 1940 it was plain that the war was closing the door to the supply route of these weapons and Mitchell was obliged to make his way home by devious routes, via Turkey and Palestine, and eventually Egypt, where within three weeks he was back at the Admiralty. An agreement had been reached some time earlier to produce the gun under licence in the



UK, and he had returned with the maker's drawings and production ideas.

In Brighton a factory had been earmarked to start production, but with the fall of France the location was considered too vulnerable. An alternative site at Bangor in North Wales was suggested.

June and July passed, with nothing happening, until a Canadian, Charles Frederick Goodeve, after serving in the RNVR, joined the staff of the Director of Scientific Research, at the Admiralty. After some considerable difficulty, inter-service rivalry, and string pulling, as well as removal of red tape, he established a factory at Ruislip in some new railway running sheds.

The story of this factory was not without its union problems, but although production was a little delayed, after seven months the first British 20 mm gun had been produced and tested. Within a year, Ruislip was turning out 750 Oerlikon guns every month. By late 1942, production had risen to 1,000, with shadow factories producing half as many again.

The tale does not end here, for in October 1940, Mitchell had been sent to the USA to set up production facilities. America, still at peace, was not very interested, and only small companies would accept the work in dribs and drabs.

Mitchell had to convert the drawings from millimetres to inches. The parent works at Zurich had attempted to ship a sample prototype gun to the USA, but it fell into the hands of German forces at Bordeaux. A replacement was shipped from the UK in a destroyer.

Under the provisions of Lease Lend, no war material could be produced in the USA, unless it was considered of use by the American armed forces, thus the fate of using the huge potential of her industries again hung in the balance.

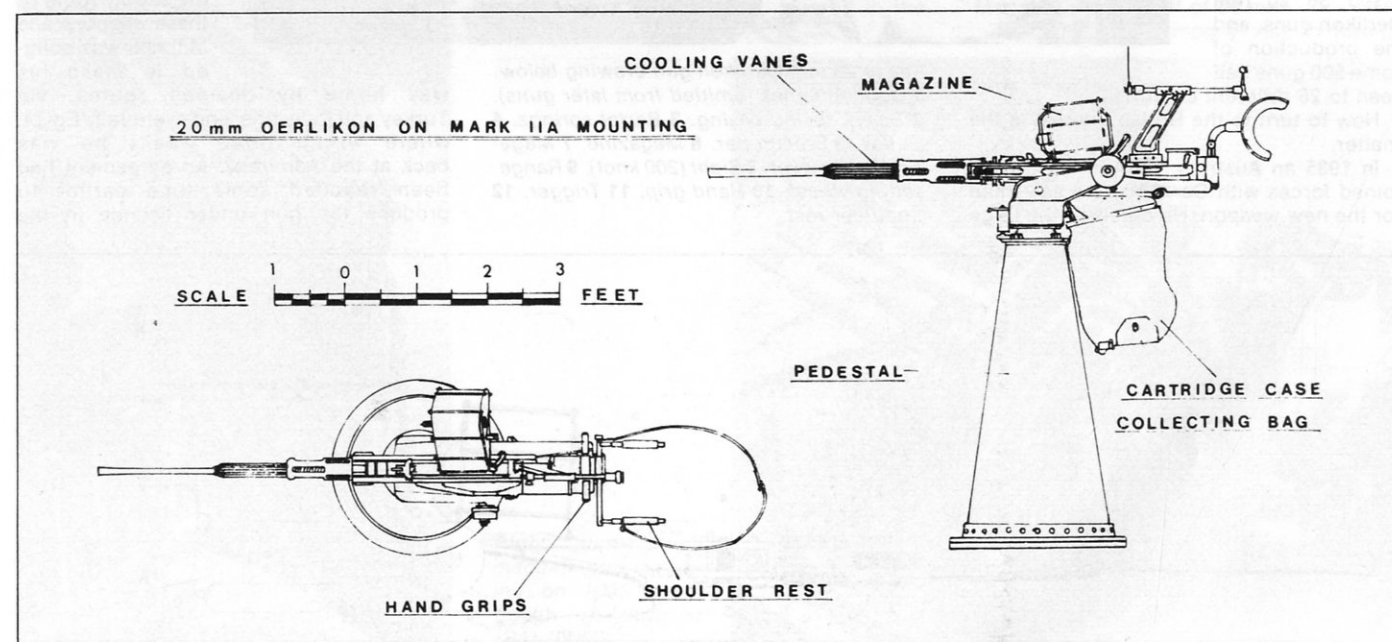
The Oerlikon gun was demonstrated to the US Navy's Bureau of Ordnance, and in less than 24 hours, backed up by a full report from the Admiralty, and a previous visit by Lord Mountbatten, it was in the order book. Due to the raid at Pearl Har-

bour, all stops were pulled out for mass production.

During the war 35,000 Oerlikons were produced in Great Britain under licence, with some 300,000 manufactured in the USA. The American government expended about \$3,000,000,000 on mountings and ammunition. Thus with both countries mass-producing a weapon that was standard and fully interchangeable, the respective navies had obtained the world's most potent close range anti-aircraft weapon. This gun was to be mounted on every type of warship. MTBs carried one or two, with battleships mounting over 70.

Now particulars of the weapon itself. An automatic gun, designed for high angle, close range, anti-aircraft fire, with an effective range of 1,000-1,200 yards. The gun is operated by pressure set up by the explosion of the round, the empty case being blown back against the breech, forcing it to the rear against the pressure of the barrel springs, which carry the moving

Continued on page 586



Messerschmitt

Bf 109

Versions B-E

HAILED AS setting 'new standards' by *Aviation News*; of containing 'an astonishing amount of new material' and 'imaginative and inspired modelling and conversion ideas' by *Modelworld*; and of making 'a good supplement to data for detailing' by the *American Aviation Historical Society Journal*, Roy Cross's classic book *Messerschmitt Bf 109* is now available again in a new, thoroughly revised edition.

The second in Patrick Stephens's Ltd's famous *Classic Aircraft* series, the book is an outstanding document on the Luftwaffe's best-known single-seat fighter as well as an essential modelling companion to anyone making plastic construction kits of the Bf 109, especially Airfix's superb 1:24 scale version.

It begins with a description of the considerations which led to the Bf 109's design and of Germany's race to re-arm during the 1930s, then goes into a detailed account of the Bf 109's performance in action from the Spanish Civil War until the end of the Battle of Britain. This is followed by a chapter specially for modellers on Battle of Britain camouflage and tactical markings, illustrated by numerous profile drawings from Robin Algar, then two technical chapters on the Bf 109E in detail, and the Daimler-Benz DB 601 engine, both of which include many illustrations from original German handbooks.

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Classic Aircraft No 1 Spitfire

by Roy Cross and Gerald Scarborough
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by Roy Cross and Gerald Scarborough in collaboration with Bruce Robertson
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A6/76

parts forward again.

The breech is not locked at the time of discharge, and the round is fired a fraction of an inch before it is fully home in the chamber, the neck of the brass case swelling to form a gas-tight seal. The barrel and casing do not recoil, the whole force of the explosion is therefore utilised in propelling the projectile, and operating the moving parts, which also places the next round in position for firing.

The Mark I gun was the original, made in Switzerland. The Mark II was made under licence in the UK, and also produced for the RN in the USA, being supplied under Lease Lend. For local reasons, connected with US Naval procedure, the guns produced in the US were marked either Mk II USN or Mk IV USN. All were, in fact, completely interchangeable.

The gun and mounting required a crew of two, the gun layer in charge, who aimed and fired the gun, and his No 2 who provided and replaced the magazine drum containing 60 rounds.

Sighting consisted of an eyepiece and an eyeshooting sight, having 100, 200, and 300 knot rings (the early models having 100 and 200 knot sight rings only).

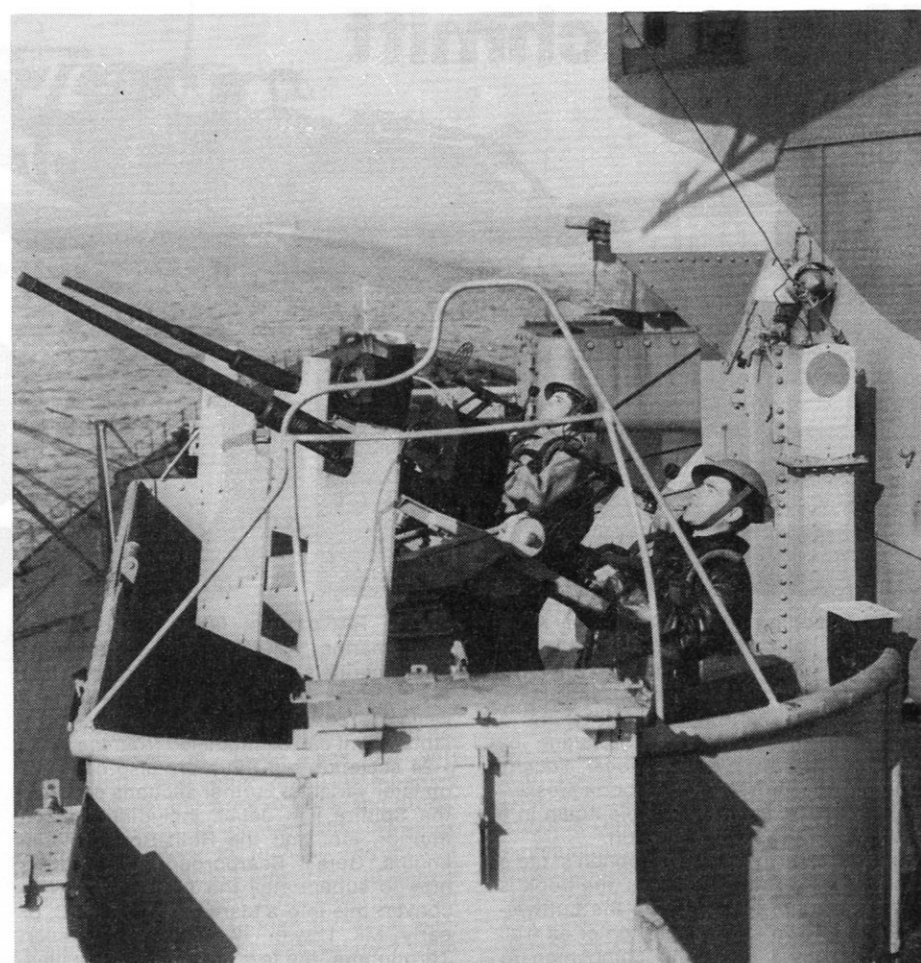
Ammunition consisted of a number of differing types. High explosive containing a percussion fuse; high explosive, incendiary, which was similar apart from being filled part with high explosive and part incendiary composition; HE incendiary tracer, which contained a tracer compound, for use at night or in poor visibility, which gave the gun layer the line of flight; and other types including practice tracer and practice non-tracer, for training purposes.

In late 1941 the following mountings were in service: Mk I, with hand raising gear, so designed that the gun trunnion's height above the deck could be varied very rapidly and at will. This was to enable the gunlayer to assume the easiest position at any particular angle of sight. A canvas bag was attached to the cradle, to catch the expended cartridge cases.

The Mk IA mounting had a pedestal of fixed height. It required a stepped platform around the weapon, as is shown by the photograph aboard the cruiser.

The Mk IIA mounting was similar in appearance to the Mk IA but had a simpler type of manufacture.

Later marks included the Mk IV US mounting of the hand raising type, being very similar to the design of the Mk I. A protective gun shield, moving only in the



Close-range 20 mm armament on HMS Howe, September 1942 (note gun muzzle covers) (IWM).

horizontal plane, was fitted to the mounting carriage.

The Mk V US mounting was very similar to the Mk IIA, but had a heavy cast iron pedestal, with a shorter pivot. The splinter shield was in two parts.

A Mk VIIA mounting later superseded the Mk IIA. Here the gun and gun cradle were unevenly balanced (muzzle heavy) in order to give a short working radius in elevation to the rear end of the gun. The gun was mounted on a cam and chain, which in turn were secured to a lead balance weight. The cam functioned to vary the pull of the cradle, according to the gun's elevation. A cartridge collecting bag was not fitted, the front of the carriage being so constructed as to form a chute which caught the spent

cases, which fell to the front of the mounting. The working radius of this gun and mounting was 40 inches.

When mounted in submarines, drainage holes were cut in the lower part of the pedestal, and the gun shield was not fitted. This mounting was known as the Mk VIIA S/M mounting.

A low angle extra light mounting, for use in coastal craft, was designated the Mk VII-IA. The gun was capable of movement between 15 degrees depression and 20 degrees elevation. A protective 1/2-inch gun shield was provided, moving only in the horizontal plane. Working radius of the mounting was 45 inches.

Weight of complete gun and shield was 5 1/2 cwt, upward lift 1.2 tons, and downward blow 1.5 tons.

The 20 mm gun was also mounted in a twin Mk V power mounting from 1943. This was a power-operated turret containing two Mk II or Mk IV guns driven by an electric hydraulic pump working at a pressure of 300 lb/sq inch, with a variable delivery pump. This mounting had an elevation of 70 degrees down to -10 degrees, and was fitted in warships of all types.

By 1944 the Mk XIV gyro gun sight was in use and being fitted to mountings of all types.

This then is some of the story of the Naval 20 mm Oerlikon gun, also used by the army and air force and still in limited use aboard RN surface ships and submarines to this day.

20 mm Oerlikon gun data

Calibre 20 mm or approximately .8 inch.

Barrel 9 grooves, right hand.

Muzzle velocity 2,725 fps.

Rate of fire 465-480 rpm (automatic fire only).

Length overall 8 feet.

Weight (gun only) Approximately 141 lb or with sight and shoulder piece 173 lb.

Weight of Mk I mounting (hand raised) 10 cwt.

Weight of Mk IIA mounting (fixed pedestal) 10 cwt 26 lb.

Weight of Mk IIIA mounting (fixed pedestal) 10 cwt 26 lb.

Magazine Capacity 60 rounds. Weight 22 lb empty, 54 lb full.

Normal allowance 8 magazines per gun.

Maximum range at 45 degree elevation Approximately 6,250 yards.

Working radius 5 feet.

One round Weighed approximately 8 1/2 oz.

Early US models had cooling fins, but these were later deleted.

Differences The Mk I gun had a detachable flash eliminator, and single shot and automatic firing. The barrel locking lever also locked the barrel sleeve and had three positions. On the Mk II gun, the barrel was bell mounted, the gun was only for automatic firing, and the barrel locking lever only had two positions.

Box top story

History of the real aircraft behind Airfix's F-80 Shooting Star kit related by **Barry C. Wheeler**

IN RESEARCHING details for new models, it frequently happens that markings chosen for the subjects depict famous aircraft, unbeknown to the majority of modellers. The Airfix kit of the Lockheed F-80C Shooting Star is such an example. Projected back in 1972 and released in 1974, the kit includes markings for a machine of the 51st Fighter Interceptor Wing nicknamed 'Saggin Dragon' and appropriately emb-

lazoned with a dramatic motif. Details of the machine were supplied through a private source and little was known of its history except that it fought in Korea and succumbed to the rigours of operational flying in 1951.

Late last year the original crew chief of the Dragon, Eugene F. O'Connell, discovered the existence of the kit and the striking box top brought back memories of the thin period of that far-off war and the Dragon's part in it. America's post-war air force was the victim of austerity measures with military budget limitations requiring the Air Force to reverse major build-up plans. However, the explosion of an atomic device by Russia in August 1949 spurred the American Government into action. An expansion programme was initiated and Lockheed F-80C, serial number 49-650, was one element of that programme. It was included in a batch of 457 F-80s ordered for the USAF as part of the change the force was undergoing from propeller-driven aircraft to jets.

While '650 was still so many metal ingots, her future crew chief was alive and well and serving in the air force. Eugene O'Connell enlisted in the Army Air Force in 1943 while still at University and it was not until January 1945 that he found himself called to duty. A glut of pilots at that time forced him to opt for training as an aircraft mechanic and his first posting was to the famous 4th Fighter Group, the distinguished UK-based wartime unit. The P-80As which then equipped the unit gave him his first experience with jets followed by a short spell with F-86As which were gradually phasing into service. In January 1950 O'Connell joined the 51st Fighter Wing at



Crew Chief O'Connell with his 'pride and joy'.

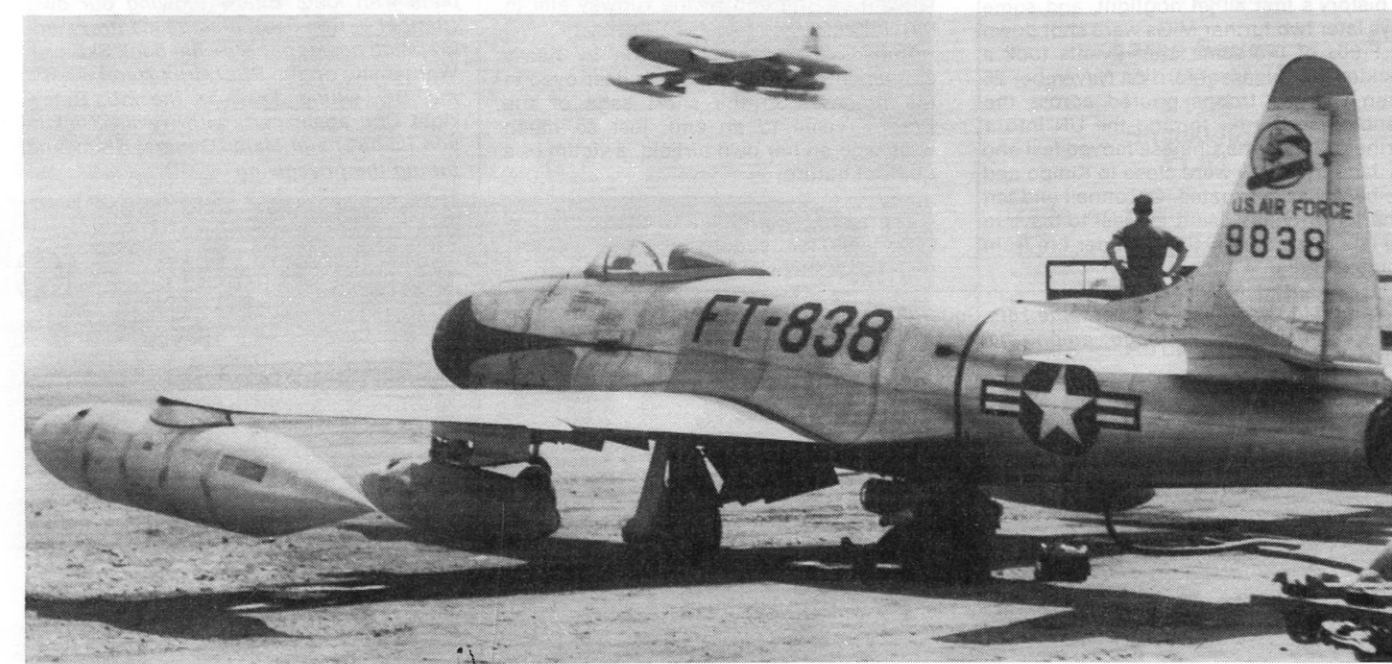
Naha, Okinawa, being assigned the 16th Fighter Squadron then flying F-80As and Bs, versions woefully unsuited for battle. Six months later, on June 25, communist North Korean forces rolled across the 38th parallel into the South to begin the bitter Korean War.

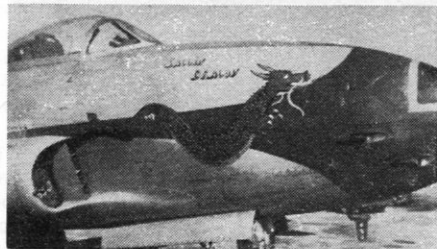
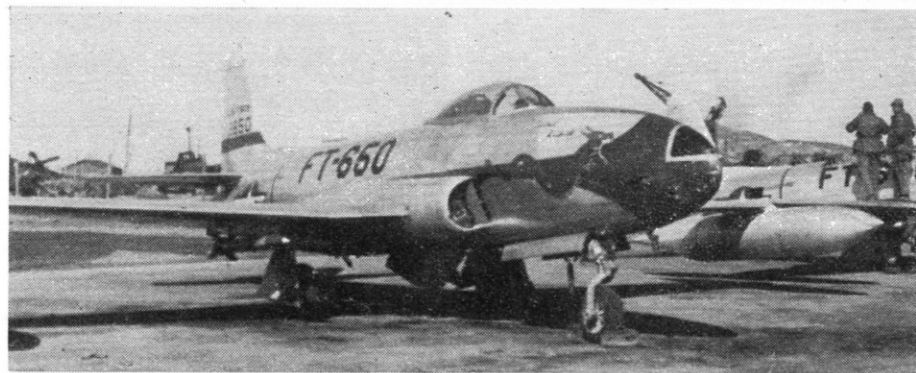
In July-August, the 16th began re-equipping with C Model Shooting Stars transferred from the 18th FW in the Philippines. O'Connell remembers '650 at this time as a particularly fast aircraft with a better performance than her sister machines — as it turned out an attribute that was to lead to her downfall. The 51st Wing transferred to the war zone early in September, '650 in company with the unit's other 'Stars' arriving at Itazuke, Japan, for combat duty. Itazuke's residents at that time read like a Who's Who of the aviation world for here were gathered some of the most famous fighter Wings of the USAF: 1st (Hat in ring), 4th (Eagle Squadron), 49th (Dick Bong's old unit) and the 56th (Hub Zemke's Wolf Pack).

For some weeks '650 flew combat



Above The 16th FS operations building at Tsuiki, Japan. Below With the extra thrust of a JATO (Jet-Assisted Take-Off) pack, a 51st FIW F-80C climbs away from a South Korean airstrip for a ground support mission. In the foreground a 16th FS aircraft is being fitted with a JATO unit; on its wing, a napalm tank inboard of the 260 gallon Fletcher tip tank.



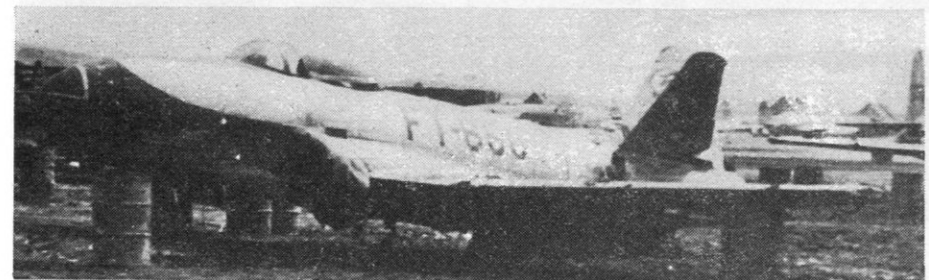


Above 'Saggin Dragon' at Kimpo on the Korean mainland, November 1950. Left Nose art of the dragon. The striking design by Crew Chief O'Connell was painted by a Japanese artist at Itazuke. Note the silver surround of the replacement antennae following the incident with a North Korean anti-aircraft device related in the story.

missions from the Japanese base and it was during this time that the dragon motif, symbolic of the area, was designed and applied. For a few cigarettes a local Japanese artist decorated the aircraft from a drawing prepared by O'Connell. The title was selected unanimously by both the air and ground crews from 'The Draggin' Dragon' or 'Saggin Dragon' — the latter being felt more appropriate to the long hard days of effort but in by all concerned. The Dragon also fell foul of a communist trap on one low-level mission when she hit a wire cable suspended between two hill tops. Luckily the anti-aircraft device broke but it destroyed the glass-fibre ADF antennae cover on the nose, removed the left wing tip and the starboard horizontal stabiliser tip.

In October the 51st Wing moved to the Korean mainland airfield of Kimpo as the North Koreans were pushed back. Bombing missions mounted as the war looked to be in its final phase. On November 8 1950, Lieutenant Brown of the 16th succeeded in downing a MiG-15 south of the Yalu River in history's first all-jet dogfight, and some days later two further MiGs were shot down by F-80s of the same unit. Events took a decidedly unpleasant turn on November 26 when Chinese troops poured across the Manchurian border forcing the UN into a further retreat. The Chinese moved fast and on January 3 they were close to Kimpo and the base was evacuated, O'Connell and ten other crew chiefs being the last to leave in the late afternoon by C-119 under fire from Chinese guns.

The end. Mud splattered and bent, the 16th Squadron's finest 'Star' rests on oil drums after the aborted take-off at Teagu; among her achievements, 167 combat missions and 300 flying hours.

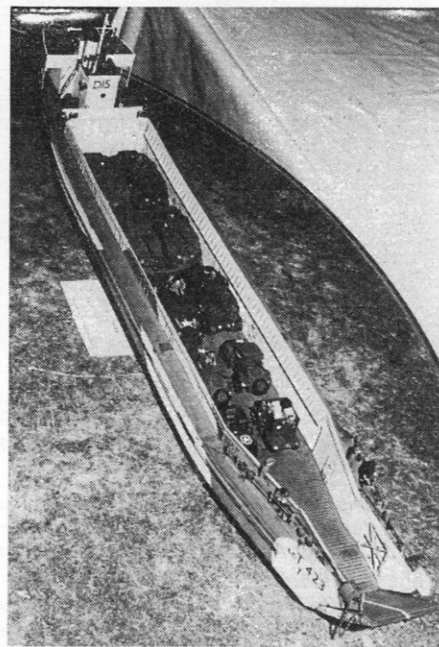


Southern Militaire — well worth a visit

Bruce Quarrie reports from Southampton.
Photographs by John Sandars

THE RECENT 'Southern Militaire' military modelling and wargaming extravaganza, held in Southampton's Post House hotel on April 3-4, attracted nearly 2,000 visitors. Organised by Neville Dickinson of Miniature Figurines, it was Southampton's first such show, and was well supported by southern wargaming clubs who put on a variety of demonstration games.

One of the centrepieces of attraction was the large 'Wild West' Skirmish wargame



Above One of our favourite models at the show — an LCT Mk III in 1:76 scale complete with load. Below Blowing our own trumpet — Don Featherstone (centre) autographing copies of his recent book Skirmish Wargaming on the PSL/Airfix stand. That's me, BQ, sitting down on the job. Below right Don again (left) with Neville Dickinson (centre) and Major General Strickland during the prizegiving.



organised by Mike Blake and Ian Colwill, in which wargamers participated for the Steve Curtis Memorial Trophy. Eventual winner was John Adams. Another was Dave Rotor's Wargames Action Group stand which had continuous games going in which spectators could participate, ranging from galactic warfare to indians chasing a wagon train of whisky and a 1:300 scale amphibious invasion.

The British Model Soldier Society and Wargames Research Group stands were both well attended, but few visitors seemed to be in a buying mood — perhaps as a result of heavy celebrating on Saturday night following Southampton's victory in the FA Cup semi-final!

The 21 modelling classes attracted over 300 entries which were judged by a panel of experts, including Roy Dilley and John Sandars. The prize for the best model of the show went to M. Jewell of Oxford for a magnificent French lancer, runner up being Barry Sharman with his excellent 1:76 scale landing craft scene.

A wargame club league competition between Bournemouth, Portsmouth, Newbury, North Farnborough and Chichester was convincingly won, to their great delight, by the latter.

The event thronged with renowned wargames 'names', including Don Featherstone of course, Phil Barker and George Gush, while the guest of honour was Major General E. V. Strickland CMG, DSO, OBE, MM, who presented the prizes on Sunday



The Southants Military Modelling Society (which is also the local BMSS branch) stand.

afternoon. Light entertainment was provided by the antics of the Waterloo and Peninsula Association members, dressed in Napoleonic French and British uniforms, whose officers seemed to spend most of their time challenging each other to duels in front of the hotel. It was noticeable that junior officers usually lost!

All in all, Southern Militaire was a most enjoyable event which promises well for the future. Many thanks to Neville Dickinson for organising it so well.

The Wild West Skirmish wargame in progress.

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Anti-aircraft Bren gun team

Airfix 'Multipose' figure conversions
from Roy Dilley

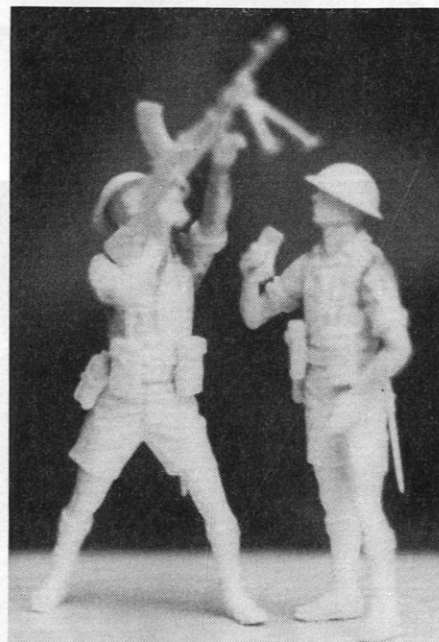
Since natural cover from aerial observation and attack was scarce in the North African campaigns of World War 2, both sides tended to provide as much local anti-aircraft protection as possible, often as much to deter attacking aircraft as to inflict upon them any serious damage. The Bren, mounted in its A/A role on its spidery legged tripod, was a familiar sight with most bodies of British troops halted temporarily or semi-permanently, eg at a headquarters, in more or less open country. Fire could be delivered around the full 360°, and, with the Number Two to assist with loading, a surprising number of rounds could be got off in a short time. It was common practice to load magazines with ammunition in the ratio of one tracer to four ball, which had the dual effect of assisting the gunner to see where he was shooting, and of informing the pilot of an attacking aircraft that he was being shot at thereby, it was hoped, discouraging him from pressing his attentions too closely on his target.

Both figures and the gun in the model group were taken from the Multipose Eighth Army kit, and the tripod was scratch-built from plastic rod and a number of small items from the spares box. It goes without saying that any flash or moulding seam was cleaned off all parts before use.

The gunner (No 1) and gun

For the man, the following basic parts were assembled: astride legs (Part 25); body (Part 12); head (Part 11); and arms

The two figures finished but unpainted, photographed before the anti-aircraft tripod mounting was put in place (Bryan Fosten).



BY THE TIME this article appears many modellers will, no doubt, have tried their hands with the 'Multipose' series of figures issued by Airfix in recent months. These figures, beautifully and accurately designed by Ron Cameron, a gifted sculptor who has already given enthusiasts plenty of scope with the items he designs for the 'Collectors' range, must be among the most flexible available at this time, providing an almost endless variety of poses, involving at the most only minor elements of conversion.

The constant 1:32 scale enables swapping around of body components, weapons and equipment, not just within a particular set, but throughout the series, and the keen converter's mouth must water at the thought of more sets to come, with an even greater potential for producing original and striking pieces. Both designer Cameron and manufacturers Airfix are to be complimented on their choice of subjects for the Multipose range, and on the basic white polystyrene mix in which the pieces are moulded, a material which is easy to work with simple tools, and which can be bonded readily both to itself and to most other substances.

It is particularly gratifying to have available figures which are in anatomical shape and proportion, acceptable representations of the types and nationalities they are meant to depict. Also of great interest and value is the variety of facial expressions to be found in each set. My intention is to present in article form over the next few months some of the conversions I have carried out, using Multipose components, to achieve what I hope will be not only pieces of interest to modellers, but also provide

The finished group as displayed at the British Model Soldier Society Annual Competitions in April, where it won second place in the Turpin Trophy (John Sanders).

them with a spur to produce original figures, using their own imaginations in conjunction with Ron Cameron's sets of basic parts.

When the Bren light machine-gun was introduced into service with the British Army in the latter part of the 1930s, it was intended primarily to act as the main fire-power of the infantry section or equivalent formation. Of Czechoslovakian origin, (the name 'Bren' being derived from the first two letters of BRNO and ENFIELD, the places initially concerned in its manufacture on the Continent and in Britain), the LMG, its official designation in the Army, was used throughout World War 2 and for many years thereafter, suffering a temporary eclipse with the arrival of the General Purpose Machine-Gun, but re-appearing, after some modification to fire the NATO ammunition, and continuing in limited service to the present day, getting on for 40 years after its debut. An eloquent testimony indeed to its reliability and all-round efficiency! The chief characteristics of the LMG are its power to deliver a volume of accurate fire with the employment of few men, its relative lightness and ease of operation, and its capacity to be converted, by the use of an adjustable tripod, for firing on fixed lines in the manner of a heavy machine-gun, and for use as a weapon against low-flying aircraft. It is in this latter role that the gun is depicted in this month's article.

(Parts 13 and 4). The left arm (Part 4) was slightly adapted to give its full reach, and the hand was turned inward by cutting and re-cementing the wrist. This gave an arm reaching upwards to grasp the carrying handle of the gun. All the pieces were lightly 'tacked' together with a sparing application of liquid cement, and adjusted into the approximate position required.

Next the moulded carrying handle on the left side of the gun (Part 36) was carefully cut almost free and shaped, and a bipod (Part 54) was added. The completed weapon was trial-fitted into the figure's hands, with pistol-grip and carrying handle firmly in place, and the man's head was manoeuvred gently to give a good snug fit of the cheek against the gun butt, before the gun was put aside for the moment.

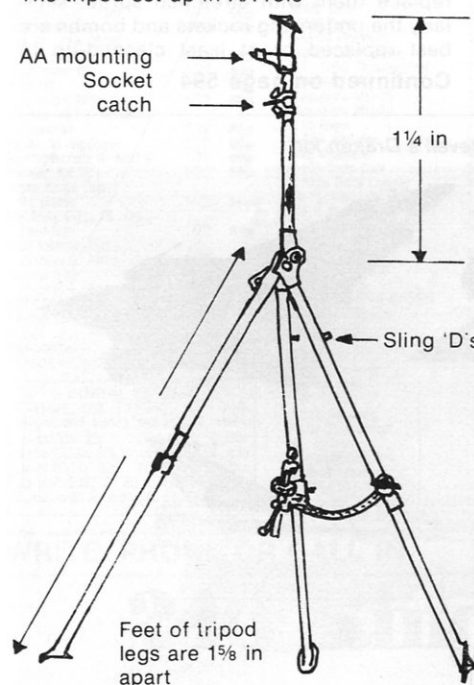
All parts of the figure were then fixed in the final attitude, and such gaps as were apparent were filled with Green putty, this, in the main, being applied under each arm at the junction with the shoulder, and above the left shoulder to simulate the bunching up of the shirt and the deltoid muscle under it due to the raising of the arm. When dry, the Green putty was smoothed down with a fine grain emery board.

A pair of pouches (Parts 82 and 83) were then fixed in place of the belt front, a bayonet in its scabbard (Part 38) was attached to the left hip, and a water bottle to the right hip, one strap going behind the right-hand pouch and the other attached below the right-hand buckle on the rear of the belt, with a short length of plastic strip, the same width as the moulded braces, fitted below the left-hand buckle to act as the 'tail' of the brace. Then a helmet (Part 56) was cleaned up ready for attachment and put on one side temporarily. The figure was then fixed to a stand ready for painting.

The loader (No 2)

This was composed of legs (Part 10); body (Part 8); head (Part 6); and arms

The tripod set up in AA role



(Parts 3 and 9). Body and legs were cemented firmly together and the head was fixed on after having had a small V-cut taken out of the back of the neck immediately below the bulge of the skull, and being bent back and cemented in an attitude as if looking slightly upwards. The right arm (Part 3) was then attached, with the magazine, cut carefully from another Bren gun in the set, fitted into the hand. A cut was then made on the inside of the elbow of the left arm, which was straightened somewhat and fitted into place, with the resultant gap at the elbow filled with a little Green putty, sanded down when thoroughly dried out. Pouches, bayonet, water-bottle and brace tail were put on as for the No 1, a helmet was prepared and the piece was attached to a temporary painting base.

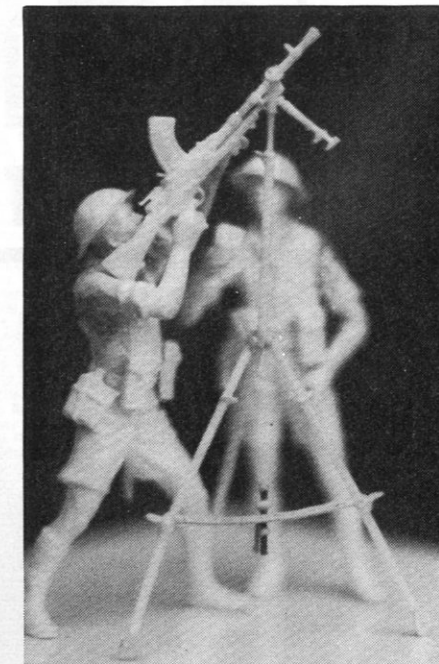
The tripod

In the accompanying drawing of the tripod, the actual model dimensions are shown, and by using these and frequent reference to the photographs, it should be quite simple to build a satisfactory replica from plastic rod (I used Riko 1 mm diameter rod), and scraps from the spares box. Such small details as clamping handles, mounting socket, sling-dees, catches, and so on, were cut from sundry odd Historex sprues of buttons, badges, buckles, etc, but can equally well be formed from fine wire, whilst the traversing-arc and mounting slide with its clamp handles was also scrap plastic strip, rod and discs. When assembled, the feet of the tripod form the points of an equilateral triangle with sides 1 1/2 in long. Extra thickness was given to the upper tripod legs and the collars around the anti-aircraft extension by painting with liquid plastic, made by dissolving sprue in a solvent, such as Winsol brush cleaner, a Winsor & Newton's product.

Painting details for the figures and gun will be found in the kit instructions, but remember that few pieces of khaki drill clothing were exactly the same shade, this being determined by age, number of washings, degree of exposure to the weather, etc, so make slight adjustments in your basic colour to allow for this fact. The tripod would have been painted in 'desert sand' or even left in dark green or khaki if the unit to which it belonged was newly out from the UK. When the faces of the figures had been painted, (remember not to paint over the tops of the heads where the helmets are to be attached), and had dried completely, narrow strips of gift wrapping ribbon were painted khaki, then fitted round the chins and secured at the tops of the heads to act as chin straps, the helmets being cemented into place over them.

All painting having been completed, a piece of 40 thou plastic sheet 4 in x 3 in was cut for the base, the various components were fixed together and into position, and the surface of the base was painted in Dark Earth. After this had dried, a coat of white PVA glue was applied to the surface, and coarse sand was sprinkled on

The magazine box is made up from thin card with dimensions 1/2 in x 3/8 in x 3/16 in. It has a lid with a small lip all round, and is intended to hold 12 magazines (one is on the gun and one in the No 2's hand in the model).

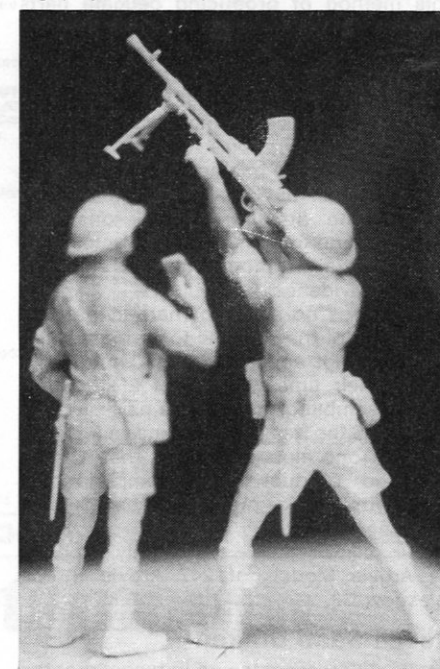


The finished but unpainted group complete with tripod. The magazine box referred to at the foot of the page is visible in the photo of the painted models opposite (Bryan Fosten).

to give a realistic effect. The completed group can be mounted on a permanent base, such as I have described in previous articles, or left as it is for fitting into dioramas or scenic settings.

Although quite a lengthy project to carry out, there is nothing in it that should be outside the ability of most beginners in the hobby, and, with the exception of the tripod which needs particular care in assembly, it makes use almost exclusively of the parts included in the kit, to result in an out of the ordinary military model. □

Rear view of the two figures before adding the tripod anti-aircraft mounting and painting (Bryan Fosten).



NEW KITS AND MODELS



Airmodel's Heinkel He 60C in 1:72 scale.

Airmodel Heinkel He 60C

AIRMODEL'S interpretation of the Heinkel He 60C floatplane is to a much higher standard than some of their other kits we have recently had for review.

Although virtually obsolete when the war started, this aircraft was used on coastal reconnaissance and communications duties until late in the war when it was transferred to the advanced training of seaplane crews.

Comprising one sheet of thick plastic card containing 12 parts, the kit introduces injection-moulded struts for the interplane and floats which make the task of final assembly much easier. Airmodel pioneered this method of producing delicate parts some years ago but recently seemed to have abandoned it, so it is nice to see that they have once again returned to old methods at the expense of recommending strips of plastic card which was never very satisfactory.

A lot more care has been taken over the surface detail but it is still a little crude around the line of the ailerons and elevators and the customary 'pimples' that appear on all Airmodel kits are still very much in evidence.

This kit is no easier or harder than the usual run-of-the-mill vac-form model and will no doubt appeal to those who like to spend their time working at a kit rather than assembling ready made parts.

At £1.85 the He 60C is expensive for what it is but one must remember that it is an imported product when comparing its price with that of home produced kits of this type.

Our review sample was kindly supplied by Argyle Models of 247 Argyle Street, Glasgow C2, who now have stocks.

Revell Saab Draken

HAVING BEEN accustomed in recent months

vided on the well printed decal sheet which also includes a third alternative, this being an aircraft of the Acro Delta aerobatic team.

This kit compares very favourably with the only other 1:72 one which is one of the older Airfix offerings and on balance a better model probably results but there is still a long way to go to meet the standards of the '70s which most modellers have now come to expect.

Frog F8F-1B Bearcat

LAST IN THE line of famous Grumman piston-engined fighters of the cat family, the Bearcat has until now only been available in 1:72 scale from Monogram. But Frog have doubled the available choice to the modeller with their version of this stubby American fighter.

Following the proven design philosophy of the Hellcat and Wildcat the Bearcat first flew in 1944 but was just too late in reaching the squadrons to see action in World War 2. With a top speed of over 420 mph from its 2,100 hp Pratt and Whitney engine, the Bearcat gave legion service to the US Navy and Marine Corps as well as the French Air Force.

Moulded in dark blue plastic, the Frog kit is accurate in outline but lacks some finesse as far as surface detail is concerned. Although panel and control surfaces are unobtrusively etched, the line marking the wing fold is very vague and in some places almost disappears completely.

The part resembling the Pratt and Whitney radial engine needs a lot of work carried out on it, as the cylinders are no more than square finless blocks, but the close cowl-ing does hide most of this Frog short-cut.

The bubble canopy comes in two parts so the model can be displayed with this open in which case work has to be carried out to the cockpit interior.

Wheels have good hub detail but the tail wheel assembly looks very heavy and needs a great deal of tidying up.

The wing cannons would be more at home on an AFV but it is a simple matter to replace them with stretched sprue, similarly the underwing rockets and bombs are best replaced or at least cleaned-up to

Continued on page 594

The three aircraft which can be made from Revell's Draken kit.



MODELS

PLASTIC KIT SPECIALISTS — ASSOCIATE MEMBER I.P.M.S.

HASEGAWA AFV KITS

1. Willys Jeep	1/72	45p
2. 155 mm M.2 Gun	1/72	45p
3. Stuart Mk. I	1/72	45p
4. M3 Lee Mk. I	1/72	45p
5. M3 Grant Mk. I	1/72	45p
6. M3A1 H. Track	1/72	45p
7. M4A1 H. Track	1/72	45p
8. Tiger I E.	1/72	45p
9. Panther G.	1/72	45p
10. 88 mm Flak 18	1/72	45p
11. Sd. Kfz 7 H. Track	1/72	45p
12. Kubelwagen and BMW Combination	1/72	45p
13. Schwimmwagen and Kettenkrad	1/72	45p
14. Sd. Kfz 7/1 with AAA	1/72	45p
15. M-4 (A3E8) Sherman	1/72	45p
16. TX-40 Fuel Truck	1/72	45p
17. Toyota Starter Truck	1/72	45p
18. Sd. Kfz 7/2 37 mm AA	1/72	45p
19. M-24 Chaffee	1/72	45p
20. G.M.C. Personnel C.	1/72	45p
21. G.M.C. Gas Truck	1/72	45p
22. G.M.C. Dump Truck	1/72	45p
23. M5 Tractor	1/72	45p
24. Daimler II A. Car	1/72	45p
25. Humber II A. Car	1/72	45p
26. Crusader Mk. III	1/72	45p
27. Churchill Mk. VII	1/72	45p
28. Leopold Rail Gun	1/72	45p
FUJIMI AFV KITS		
T-34/76A	1/76	65p
Valentine	1/76	65p
M4A3 Sherman	1/76	65p
PzKpfw 38(t)	1/76	65p
88 mm Gun and Crew	1/76	65p
Matilda II	1/76	65p
Tiger II	1/76	65p
Jagd Panther Hetzer	1/76	65p
Jagdtriger	1/76	65p
251/110 Hanomag	1/76	65p
Sd. Kfz. 222 A. Car	1/76	65p
Chi-ha (Advanced)	1/76	65p
Jap Type I	1/76	65p
SU-85	1/76	65p
T34/85	1/76	65p
Kubelwagen and BMW	1/76	65p
R75 Combination	1/76	65p
Elephant	1/76	65p
Panzer I	1/76	65p
Panzer Jager	1/76	65p
Tents, Oil Drums, Walls, Sandbags, Footbridge	1/76	65p
Watch Tower, Tank Obstacles, Pill Boxes	1/76	65p
ESCI AFV KITS		
PzKpfw 111 Ausf M	1/72	60p
Sd. Kfz 251/1 Hanomag	1/72	60p
PzKpfw II Ausf. F	1/72	60p
PzKpfw VI King Tiger	1/72	60p
PzKpfw IV Ausf. H	1/72	60p
PzKpfw V Panther	1/72	60p
PzKpfw V Jagd Panther	1/72	60p
M4A1 Sherman	1/72	60p
M-12 Gun Carriage	1/72	60p
Fiat Ansaldo M13/40	1/72	60p
Fiat Ansaldo 75/18 S.P. How.	1/72	60p
Wespe	1/72	60p
Hummel	1/72	60p
Hetzer	1/72	60p
Marder III	1/72	60p
PzKpfw III N/M	1/72	60p
Sd. Kfz. II H. Track	1/72	60p
Opel Ambulance	1/72	60p
PAK 40, PAK 35/36	1/72	60p
A. A. Flak 38	1/72	60p
Jagdpanzer IV	1/72	60p
Elephant	1/72	60p
3 Ton Opel Blitz	1/72	60p
Sd. Kfz. 251/1 Rocket	1/72	60p
Launcher	1/72	60p
Pz. JG. VI Jagdtriger	1/72	60p
Sturmgeschütz III Ausf. G.	1/72	60p
Russian KV-1c	1/72	60p
Afrika Korps Figs.	1/72	60p
21 pieces	1/72	60p
8th Army Figs. 18 plus	1/72	60p
Field Gun	1/72	60p
U.S. Marines Figs.	1/72	60p
22 plus S. Arms	1/72	60p
Russian Figs.	1/72	60p
26 plus S. Arms	1/72	60p
NITTO AFV KITS		
Panther G	1/76	60p
Tiger I	1/76	60p
Jagdpanther	1/76	60p
PzKpfw III Ausf. M/N	1/76	60p

SUPERMODEL A/C KITS

Macchi MC. 202	1/72	65p
Macchi MC. 205	1/72	65p
Reggiane RE-2000	1/72	65p
Reggiane RE-2001	1/72	65p
Reggiane RE-2002	1/72	65p
Fiat G.55S Silurante	1/72	65p
Fiat CR.32	1/72	65p
S.M. 81 Biplan	1/72	65p
Cant Z1007 Single Fin	1/72	65p
Cant Z1007 Twin Fin	1/72	65p

ITALAEREI A/C KITS

Lavochkin LA-5FN	1/72	55p
Reggiane RE-2002	1/72	65p
Henschel HS-126	1/72	80p
RF-84F Thunderflash	1/72	99p
F-84F Thunderstreak	1/72	99p
Fiat BR.20 Cicogna	1/72	1.65
Caproni CA.313/314	1/72	1.65
Junkers Ju-188	1/72	1.65
Caproni CA.311	1/72	1.65
Junkers JU 86 D-1	1/72	1.65
Airspeed Horsa	1/72	1.65
Waco CG4 Hadrian	1/72	1.65
Cant Z.501 F. Boat	1/72	1.65
Gotha Go. 242/244	1/72	1.65

AIR CONVERSIONS

Hunter T.7 kit Conv.	1/72	60p
Harrier T.2 kit Conv.	1/72	60p

AOSHIMA A/C KITS

K.15K1 Norm	1/72	55p
M.7M Reppu (Sam)	1/72	55p
A.M6A1 Seiran	1/72	55p
B.P-63A Kingcobra	1/72	55p
N.C6N1 Myrt (Saiun)	1/72	55p

WILLIAM BROS A/C KITS

Hunter T.7 kit Conv.	1/72	£2.90
Boeing 247	1/72	£2.90

NICHIMO A/C KIT

M.A5M4 Claude	1/72	55p
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HASEGAWA A/C KITS

Lockheed T-33A	1/72	45p
Curtiss SO. C-3 Seagull	1/72	45p
N.A. F-86F Sabre	1/72	45p
Heinkel HE-51 A-1	1/72	45p
F-5A Freedom Fighter	1/72	45p
T38A1 (F-5H) Talon	1/72	45p
AGM3 Mod. 22 Zero	1/72	45p
AGM3 Mod. 32 Zero	1/72	45p
Heinkel HE-51 B-2	1/72	45p
C. Seagull Floatplane	1/72	45p
Cessna A-37A	1/72	45p
Bell UH-1D Iroquois	1/72	45p
MIG-17E/D 'Fresco'	1/72	45p
P-47D Razorback	1/72	45p
P-47D Bubbletop	1/72	45p
S. Spittfire Mk. I	1/72	45p
P-51D Mustang	1/72	45p
Ki-44 Shoki (Tojo)	1/72	45p
Ki-61 Hien (Tony)	1/72	45p
FW 190A-5/7	1/72	45p
FW 190D-9	1/72	45p
H.S. Harrier Mk. I	1/72	45p
BK Lightning 6	1/72	45p
Aichi E-13A 'Lake'	1/72	45p
T-34A Mentor	1/72	45p
G.OV 10A Bronco	1/72	45p
Fuji T-1A Trainer	1/72	45p
G.OV-1B Mohawk	1/72	45p
G.OV-1A Mohawk	1/72	45p
L.F. 104 Starfighter	1/72	45p
AGM2 Zero	1/72	45p
AGM5 Zero	1/72	45p
F-4K/M Phantom	1/72	45p
F1000 Super Sabre	1/72	45p
R.F. 105D Thunderchief	1/72	45p
Type 94-1 'Aif'	1/72	45p
Mitsubishi MU-2S	1/72	45p
Mitsubishi MU-2J	1/72	45p
F-15 Eagle	1/72	45p
G.A6A Intruder	1/72	1.00
F-4E Phantom	1/72	1.00
F-106 Delta Dart	1/72	1.10
F-102A Delta Dagger	1/72	1.10
R-5C Vigilante	1/72	1.10
S2F-1 (S-2A) Tracker	1/72	1.10
L. P2V7 Neptune	1/72	1.65
M. G4M1 Betty, with Baka Bomb	1/72	1.95
Emily Flying Boat	1/72	1.95
Boeing B.47E	1/72	1.95
Shanweiwa PS-1 or SS-2	1/72	1.95
SP-5B Martin	1/72	1.95
Boeing P-12E	1/32	1.75
Boeing F-4B4	1/32	1.75
AGM2/3/5 Zero	1/32	1.75
ME. 163 Komet	1/32	1.75
ME. BF-109E	1/32	1.75
F.W. 190A	1/32	1.75
P-51D Mustang	1/32	1.75
P-26A Peashooter	1/32	1.75
ME. 262A	1/32	1.95
G.F6F3/5 Hellcat	1/32	2.75
N. Ki43 Oscar	1/32	2.75
L. F104 G/J	1/32	2.95
N.A.F.-86F Sabre	1/32	3.25
Mc D/D A4E/F Skyhawk	1/32	3.50

REPLANES VACFORMS A/C

P-51H Fuselage	1/72	50p
B.F4B-3, C.P.1 Fuselages	1/72	50p
Bel 206 Jetranger	1/72	50p
Stinson Sentinel	1/72	50p
SB-34/Helldiver	1/72	50p
S. Spitfire	1/72	50p
Rep. 343A Lancer	1/72	50p
Heinkel HE-112-0	1/72	50p
Ryan ST/PT Trainers	1/72	50p
Serversky K-100	1/72	50p
Curtiss-Wright Demon	1/72	50p
Breda BA-65	1/72	50p
Grumman F3F-1/2	1/72	50p
Curtiss A-8 Shrike	1/72	50p
R. F-84G Thunderbolt	1/72	50p
D.O-43 Observations	1/72	50p
Fairey Fulmar I/II	1/72	50p
N.A. F-4J Fury	1/72	50p
N.A. F-86D Sabre	1/72	50p
B.C.45 Expeditor	1/72	50p
Martin B-10	1/72	50p
XFM-1 Airacuda	1/72	50p
D.H. Rapide (Dominie)	1/72	50p
Super Constellation	1/72	50p
incl. extra parts for EC-121V and WV.2	1/72	50p
YB-17 F. Fortress with extra fuselage for B-17D	1/72	50p

HELLER A/C KITS

Poikarpov 1-153	1/72	55p
Yak-3	1/72	55p
ME. 262B-1a/U1	1/72	55p
FW. 190A-8/F3	1/72	55p
P-47N Thunderbolt	1/72	55p
Block 152	1/72	55p
Dewoitine D-520	1/72	55p
Caudron 714	1/72	55p
Les Mureaux 117	1/72	55p
Morane M.S.230	1/72	55p
Morane M.S.406	1/72	55p
Potez 631	1/72	55p
Block 174	1/72	55p
Amiot 143	1/72	55p
Block 210	1/72	55p
Potez 540	1/72	55p

FROG A/C KITS

PAK 40, PAK 35/36		
A.A. Flak 38	1/72	60p
Jagdpanzer IV	1/72	60p

match the rest of the kit mouldings.

Markings for a Bearcat of VF-72 of the US Navy and one used by the French Air Force in Vietnam in 1952 are included on the decal sheet which comes up to the standard one has now come to accept as normal from Frog.

At 55p this is a good model that will complete Grumman's table top air force for all those who have been collecting 'Cats'. Our review sample was kindly supplied by Jones Bros of 56 Turnham Green Terrace, Chiswick, London W.4.

Revell B 58 Hustler

REVELL'S POLICY of re-issuing old kits continues with the 1958 vintage Hustler which was one of those models that were produced to fit a box rather than a collectable scale.

This futuristic looking aeroplane is one that has been neglected by the kit manufacturers which is a great pity as there is much to attract the man who looks for something a little different for his collection.

Although fairly accurate in outline the Revell kit scales out at about 1:98 so is of little use to serious collectors. The parts, bearing in mind that the kit was first released some 18 years ago, are cleanly moulded with very fine surface detail. Sadly a lot of this will have to be removed as the old '50s trade mark of etched markings rears its head in the form of USAF on the wings and United States Air Force on the fuselage, the national markings are also etched into their positions, and in removing these unwanted locations much of the surrounding panel lines and control surfaces disappear.

Crew entry hatches can be left in the open positions but if this is done a lot of interior detail must be added and this is difficult since the Hustler had complete crew escape capsules.

The decal sheet is very comprehensive although some of the markings have been very much oversimplified and the fuselage band is far too dark, the same colour blue for the national markings having been used instead of the correct shade of light blue.

Assembly is straightforward and parts fit together well with a minimum of filler being required. If the kit was to a more acceptable scale it could be made into a worthwhile model of this American supersonic bomber, as it is, it will while away a couple of pleasant evenings and make an attractive desk top model, unless you are fussy about constant scale collections.

Frog Ar 234 'Blitz'

HISTORIANS HAVE made much of the Me 262 being pushed into service as a bomber when it was in fact designed as a fighter and in so doing many have overlooked the first true jet bomber to serve any air force. This was the Arado Ar 234 which made its first flight on June 15 1943 and served with the Luftwaffe to the collapse of German resistance in 1945.

The latest Frog kit captures the modern lines of this important aircraft but does not stop at providing parts for the twin engined version, the Ar 234B-2. Alternative components for the four engined Ar 234C-2 and C-3 are included in a box that is absolutely filled to the brim with finely moulded dark blue pieces.



A new venture from Revell is a pair of snap-together kits depicting a PzKpfw IV and a Sherman. We haven't yet seen samples so can't tell you the scale, but the price will be 90p each.

Among the many parts are correct canopies for the three possible versions as well as various bomb loads and a complete V-1 for the C-2 which carried this missile in pick-a-back style; the first version of a jet bomber carrying a stand-off weapon.

The rocket assisted pods used to help take-off are included together with a very comprehensive selection of serials, and control actuators. These items are a little over scale due to moulding limitations but it is not too difficult to bring them into line and they certainly add to the overall air of authenticity.

Engine intakes are nicely detailed but alas the same cannot be said of the wheels, especially the nose one which is moulded as part of the oleo leg — shades of the '50s which by now really should be in the pages of history.

The decal sheet, which over the years had become the hallmark of quality in Frog kits, maintains the tradition albeit very simple. Markings for two aircraft, a B-2 of 9 111/KG76 and a C-3 in production finish, are those provided and they are adequate for this clean-lined German jet.

The review sample was kindly provided by Jones Bros of Chiswick and retails at 75p.

Soldering iron

ON FIRST THOUGHTS a soldering iron might appear to be a tool that has little application as far as plastic modelling is concerned. But if further consideration is given there are many occasions when a miniature iron can be very useful.

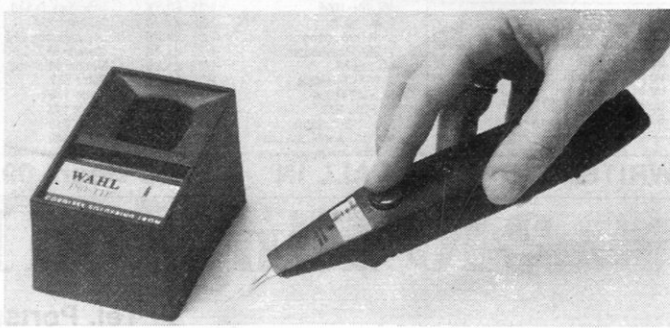
If modelling is not confined to plastic materials then a small iron can be used in the conventional way to achieve good solid joints on metal parts, completing electrical wiring and other similar jobs. In plastic modelling a unit with a small tip can be used to join tank tracks as well as roughen up the surface of plastic that is simulating horse's mane, hair on figures, shakos and busbies, battle damage or even to weld together plastic card.

The latest cordless type miniature iron to be released by Greenwood Electronics of Portman Road, Reading, Berks, is the Mark 11 version of the American-designed and manufactured Iso-Tip soldering iron.

This unit, which weighs only six ounces, is completely portable and comes complete with an automatic recharging stand. Powered by nickel cadmium batteries, the iron gives a performance equivalent to up to 50 watts with a 700°F+ tip temperature. Fully charged the Iso-Tip will give up to 125 solder joints depending on wire size, and when placed on its stand, is automatically recharged. Soldering tips are available in five different sizes, ranging from micro to heavy duty types.

Operation of the Iron is simplicity itself, requiring only the pressing of a button that brings the tip to working temperature in only ten seconds. There is also a built-in working light and the operating button has a safety lock to prevent accidental heating.

The Iso-Tip is eight inches long and is very easy to handle. When totally discharged it will recharge overnight and cannot be overcharged. This is a most useful



The Mk II Iso-Tip soldering iron complete with its automatic recharging stand.



ful piece of equipment not only for modelling but all those odd jobs that occur around the house to which modellers' attention is often called, as if they have a magic touch with anything technical or complicated.

The Iso-Tip comes complete in a package containing the Iron, recharging stand, fine tip and full instructions, and costs £11.95 plus 8 per cent VAT.

Modeldecals

ALTHOUGH THE quality of decals now included in kits has reached a stage that a few years ago would have been high by specialist producers, there is still an air of expectancy after every announcement of new kits, as to just what the specialist decal manufacturers will produce for the proposed 'newcomer'. In terms of post-war RAF, NATO, USAF and USN aircraft, the first manufacturer who comes to mind is Modeldecals, and those who choose to model such subjects are rarely disappointed when this company's sheets are released. Whilst on this theme the mind runs absolute riot as to what might well be in the pipeline for the recently announced Frog Sea Vixen!

But back to reality; sheets 29 and 30 which are now available from the sole UK distributor, Modeltoys of 246 Kingston Road, Portsmouth, Hants, at 60p each plus 15 p post and packing on two or 18p on four, are, as one would expect, full of interest and to the same extremely high standard as their last releases.

Content and choice of subject are first class as is the design and printing. The standards are such that one is forced into taking particular care in making the basic model, for to decorate a rushed or inferior model with such exquisite masterpieces would be pure sacrilege.

Layout follows the now accepted formula and the comprehensive instruction sheets are supplemented with photographs of the actual subjects depicted, so there can be no excuses for incorrect positioning or inaccurate models.

Sheet 29 contains the following: BAC-Sepecat Jaguar GR1 and T2 of 14 Squadron RAF Bruggen, a Republic F-84F of 314 Squadron of the Dutch Air Force from Eindhoven, a RF-84F of 717 Squadron Royal Norwegian Air Force, Rygge, Norway circa 1968, and a C-130H of the Royal Danish Air Force, this being a machine of 721 Squadron from Vaerlose.

Sheet 30 contains: Grumman US-2N Tracker of 320 Squadron, Royal Netherlands Naval Air Service plus two spare squadron badges for updating the markings for the SP2H Neptune (Frog kit), alternative markings for a Javelin FAW 8 of 85 Squadron or 41 Squadron, BAC-Sepecat Jaguar GR1 and T2 of 17 Squadron RAF Bruggen, and alternatives for a F4M Phantom FGR 2 of 29 Squadron, 54 Squadron or 228 OCU (64 Squadron).

Full colour details quoting BS numbers are listed on the instructions sheets which also include many helpful modelling tips.

Every available space is used to its fullest potential and on sheet 30 there is a good illustration of this where one corner contains markings for 233 OCU Harriers and the Moth emblem for a T17 Canberra of 360 Squadron as featured in the Canberra conversion article published in the April 1975 Airfix Magazine.

NEWS FOR WARGAMERS

Kingmaker

IT IS ALWAYS a pleasure to have the opportunity of reviewing games of British origin. Many readers must believe that we are too biased towards American manufacturers, especially SPI! But the truth is that British games with a military flavour are a bit thin on the ground and of the few that are issued, fewer still come our way for review.

What a pity then that I am unable to herald 'Kingmaker' as a superb example of the art, for two reasons. Firstly, because to herald anything implies that it is new — I am told that I have been sitting on Kingmaker for nine months or so, and I can believe it (I claim that this period was required for complete gestation of this review). Secondly I have reservations about several aspects of the game. But first the good news.

Kingmaker fills a gap in the periods covered by board wargames, even if it is on the fringes of true combat simulations, by representing the English Wars of the Roses. The game is played on a high-quality, colourful board on which is printed a map of England and Wales showing major castles, towns and roads. The players (up to 12 in number) control factions of nobles, jockeying to place their favourite Royal Personage of the moment on the throne of England and trying to remove the opposition by diplomatic manoeuvre or force.

The nobles, there are 23 altogether, are represented by cardboard counters coloured with the appropriate coat of arms. Their strength is acquired by the accumulation of titles, political offices, support from the church hierarchy and the gathering of troops. There is also a limited amount of shipping available.

The nobles are moved about the board, either along the few main roads for indefinite distances until blocked by a hostile castle or town, or else across country, five squares at a time (one only through forests). The squares, which are superimposed on the map, are of varying size to allow for the differing nature of the land, small squares for rough areas, larger ones for easy terrain. It is a clever idea which

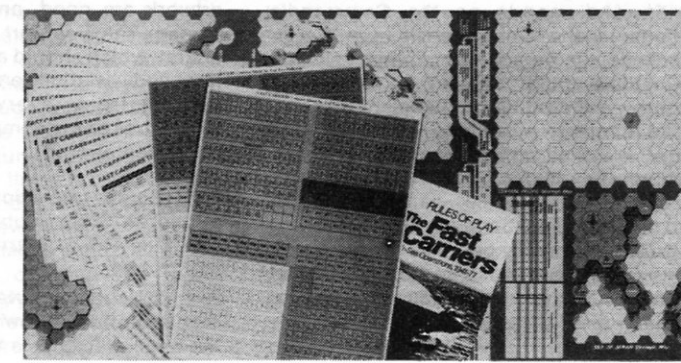
could be further employed to great benefit in the simpler type of game. The method of resolving battles and sieges is acceptable and based on a calculation of opposing strengths and pure chance.

The game is quite exciting even if it does not generate the same passions that a good 'Diplomacy' session can (the two games are from the same manufacturer). There are, however, too many ragged ends to make it perfect.

To start with, the rules could be presented in clearer form. The course of play seems to be predictable, one side, or alliance, being clearly in the ascendancy after an hour or two with little chance for a recovery by the opposition, unless they are fortunate enough to have luck beyond the law of averages. The best they can do is to offer their support to whoever seems likely to come out top dog when the successful alliance begins to disintegrate in the final struggle for absolute supremacy, but playing second fiddle is not much fun. I am willing to concede that it is possible, even likely, that experience opens up whole new areas of strategy but it will take some determined players to gain the necessary expertise.

My own efforts always resulted in a stalemate, and after hours of struggle it is not a very rewarding end. The problem was that eventually one player would control everything and everybody except one wretch with a ship on to which he could bundle his own last surviving candidate for the throne, put to sea and evade all attempts at capture, thereby denying outright victory to his frustrated opponent. This situation may be the result of a misinterpretation of the rules, or it could be that particular skill is called for to prevent it. One obvious solution is to make sure you control all the ships, but there are chance elements in the game that will continually rob you of that opportunity.

To sum up, Kingmaker might be an excellent game but I cannot be certain of it! It is manufactured by Ariel and can be found in some toy shops and department stores, or bought through a mail order firm such as Skytrex of Wymeswold, Leicestershire. The price is £3.40.



Playing map and pieces for Simulation Publications' recent game 'Fast Carriers' reviewed here in March.

BOOKS FOR MODELLERS

Modelling

Making Model Soldiers, by Michael Blake. Stanley Paul, 3 Fitzroy Square, London W1P 6JD. Price £3.60.

ONE WOULD HARDLY have thought there was room for any more books on model soldiers, following the vast numbers of volumes on collecting and PSL's definitive practical handbook, *Modelling Miniature Figures*, but Michael Blake has nevertheless done a workmanlike job which will probably have a special appeal to the beginner.

In 144 pages, well illustrated with the author's own drawings and a small but well chosen selection of photographs, Mr Blake runs through all the basic principles of getting started in this fascinating hobby, and includes the now traditional chapters on tools and accessories, painting techniques, assembling, animating, converting, moulding, casting and making dioramas. He covers models in all the popular materials, including metal, but the emphasis is on plastic, both polythene and polystyrene.

Although there are not the variety of practical conversion ideas and examples as in the PSL book mentioned above, there are enough for the beginner to cut his teeth on, while even the expert modellers will find many tips of interest in this book.

Several pages of useful appendices list makers' names and addresses, specialist suppliers, societies, libraries and magazine, while there is also a bibliography and a page on wargaming.

Aviation

Strategic Air Command, by David A. Anderson. Ian Allan Ltd, Terminal House, Shepperton, TW17 8AS. Price £4.95.

AMERICA'S deterrent arsenal contains three weapon systems: manned bombers, land-based inter-continental ballistic missiles, and sea-based ballistic missiles. Two elements of this triad, the land and sea, make up Strategic Air Command (SAC).

In this book, David A. Anderson traces the development of these components, explains their organisation, details their inventories, and reports on the Command's actions in the Cuban crisis, the Berlin Blockade, the Korean war (when jet aircraft 'won their spurs' by proving they could absorb an incredible punishment and still make it back to base), and in Vietnam.

SAC is tasked with maintaining the peace through its nuclear deterrent, and with global reconnaissance, aerial refuelling, and conventional bombing; the arms and instruments which perform these operations are well examined and well illustrated — there are almost twice as many photographs (missiles, control centres, aircraft), all well captioned and giving aircraft num-

bers where available, as there are FB111s within SAC — and there were 70 of these swing-wing aircraft within the Command at the time the book was written (mid-74).

To cover such a vast subject in a single book is no easy task especially for an author who confesses a background devoid of military experience, but the facts and figures are relieved when the book takes the reader along on the first solo trip of a 111 crew — goes underground with a missile crew on a 36-hour duty tour — and relieves the boredom, terror and tired relief of a B52 sortie from Guam (6-7 hours) over North Vietnam (minutes) and back (6-7 hours).

The only aspect of the Command which is mentioned too briefly is the future: there is only passing reference to the B1 which is to replace the long serving B52s and no mention of the missile scheduled to take over from the Minuteman, the very accurate and powerful M-X.

As an introduction to American military aviation since the war the book is useful; as a basis for information on a large part of America's, and therefore NATO's, deterrent, it is valuable — and comforting.

Beaufort Special, by Bruce Robertson. Ian Allan Ltd, Terminal House, Shepperton, Middx TW17 8AS. Price £2.50.

THE EXCELLENT Ian Allan formula as before, filling a gap on the shelves as this is a much neglected aircraft considering that more than 2,000 were built over a period of seven years, and the type saw service in all theatres of war. In fact, its main claim to fame has always been as the ancestor of the Beaufighter. Reading the book helps to explain this to a certain degree; the early version was equipped with unreliable engines, swung badly on take-off, and more losses were sustained during training or through engine failure than were attributable to enemy action.

As a combat aircraft, the Beaufort was mediocre. It is easy to write entertainingly about successful aircraft, or even failures provided that the failure is spectacular. All the more credit to Bruce Robertson for this eminently readable book on what was at best a mediocrity. The photographs and artwork are good, and imaginatively presented. The Beaufort has a certain brutal charm, which should appeal to both modellers and aviation enthusiasts, and it is shown from every possible angle. Altogether a very comprehensive study of a neglected aircraft.

F-15 Eagle in Action, by Lou Drendel. Squadron/Signal Publications Inc, 3461 E. Ten Mile Road, Warren, Michigan 48091, USA. \$3.95.

THE SQUADRON/SIGNAL range of aircraft monographs are now well established and the familiar format is to be seen again cov-

ering one of the USA's most exciting aircraft, the F-15 Eagle.

Modellers will find a wealth of useful information within the covers of this book which covers the history of the Eagle to date, though in years to come there will be a lot more to add and no doubt Squadron/Signal will add further volumes as the story unfolds.

The centre spread contains colour photographs of the cockpit layout and the record breaking Streak Eagle as well as the eighth production machine in its all white scheme. These pages are completed by a colour two-view plan of the aircraft in the two-tone grey scheme recently introduced.

Lou Drendel's artwork needs no introduction and his dramatic cover painting really does capture the feeling of superiority that goes with this aircraft. Close-up photographs of parts of the aircraft mingle alongside those of it under test and in production and a study of them can only result in a perfect model from one of the three kits that are currently available of this aircraft. At \$3.95 this book is expensive in England but the exchange rate against the £ sterling plus import charges must be taken into account when trying to assess its true value.

Military

Atlas of the American Revolution, edited by Kenneth Nebenzahl, text by Don Higginbotham, Arms & Armour Press, 2-6 Hampstead High Street, London NW3. Price £15.95.

THIS MUST BE the book for every historian with an interest in the American Revolution and uniform enthusiast or wargamer. It is a large — no, enormous — volume of over 200 full-colour pages, attractively cased and bound, containing dozens and dozens of reproductions of contemporary maps of those parts of the North American continent where all the action took place, supplemented by illustrations of the battles and leaders, cartoons from magazines and the like, and a detailed but highly readable text.

First published in America in 1974, it has now been re-issued to commemorate this year's bicentenary. Far more than a straightforward atlas, it is a beautifully produced history of the causes of the American Revolution and the course of the war, including detailed land and sea battle maps, which richly deserves a place on every enthusiast's bookshelf.

Its principal value lies in the fact that all the illustrations are contemporary or near-contemporary to the events they portray so that, although perhaps primitive in some respects by modern cartographical standards, they have at least not suffered distortion through hindsight which adversely affects many reconstructions of historical events. This is the original source material, and will therefore be indispensable for research purposes. Highly recommended.

A Military Atlas of the First World War, by Arthur Banks. Published by Heinemann Educational Books, 48 Charles Street, London W1X 8AH. Price £8.50.

ARTHUR BANKS is well known as a cartographer and illustrator. This book shows why. As an assemblage of military maps and diagrams it could not be bettered.



Every section is prefaced with a text by Alan Palmer, each a masterpiece of clarity and brevity. The details are left to Arthur Banks to unfold, map by map, in a way which illumines the most complex manoeuvres. The sheer range of the book is astonishing, and this in spite of the author's introductory remark that it is less comprehensive than he intended! Nothing of importance in the world-wide land, sea and air war is omitted. Fascinating details abound, and the excellent line drawings of aircraft, ships and weapons are an added attraction.

The book opens with the pre-war situation and then deals separately and in detail with the Eastern and Western fronts during 1914. Thereafter, each year of the war on these two fronts has its own section. The Gallipoli Campaign merits separate treatment, while the peripheral campaigns in the Balkans, Middle East, Italy, Germany and America are lumped together in a single section. The book ends with the war at sea and in the air. The detail throughout needs to be seen to be appreciated. It is a book which will tempt all serious students of warfare, but, unhappily, at £8.50 only the most dedicated are likely to buy it. They will find the investment well worthwhile. Highly recommended.

Japan at War. An illustrated history of the War in the Far East, 1931-45, by Basil Collier. Sidgwick & Jackson, 1 Tavistock Chambers, Bloomsbury Way, London WC1. Price £5.50.

REGARDED PURELY as a primer of the war with Japan, this book is a good readable book, but regarded as a proper history, which is what it seems to set out to be, it is less than satisfactory. Leaving aside the illustrated side of the book for a moment, the text is brief and lucid but it quite simply leaves too many questions unanswered. Taking 1931 as a starting point, the history of Japan's expansion is briefly followed but nowhere is the question 'why?' properly attempted. Neither is the baffling question of why the Pearl Harbour attack was carried out fully explored, and one of the most difficult questions of all, namely the involvement and responsibility of Emperor Hirohito in the war, is barely touched upon.

There are many other points not fully covered or even mentioned. Two that stand out are the pre-1940 Army v. Navy squabbles and the 'strike north — strike south' political battles of the mid-1930s.

After dealing with the events of up to 1942 the tone of the text turns from Japan at War to America at War, for in the later sections the emphasis is almost entirely on the Allied war efforts and the Japanese barely get a mention. This is amplified by the illustrations which show a definite American bias. But many of these illustrations are very good indeed. There is a colour section and the maps used are good and clear. The photographs chosen, and there are many of them, are varied, full of life and are mainly good and clear, so many will buy the book for these alone. Perhaps this work should have been titled 'America at War', and then many of its shortcomings would have been removed.

Armies and Enemies of Ancient China, by John Greer. Wargames Research Group, 75 Ardingly Drive, Goring-by-Sea, Sussex. Price £3.50 including postage.

THIS, THE biggest yet in the WRG series, will be very welcome to a large number of ancient wargamers, adding as it does a new dimension to their period. Chinese armies covered include Chai, Chi'n, Han, Northern and Southern dynasties, T'ang, Sung, and Chin, together with those of the Hsiung-nu, Kushans, Sogdians, Koreans, T'u Chueh, Early Moslems, Tibetans, Khitans, Qara-Khitans, Jurchens, Seljuks, Mongols, Japanese, Burmese and a number of lesser peoples.

The drawings are the best yet, though unfortunately some detail has been lost in one or two places in the reproduction. John Greer has relied heavily on pictorial sources for his illustrations, so that the figures are fairly representative, even though in a few cases the evidence has been misinterpreted.

In fact there are several other faults in the book, although generally the author's information only becomes suspect when he deals with more western peoples, such as the Arabs and Seljuks. For the former, for instance, he claims 40 per cent light horse archers, which is completely unjustifiable — even in the 8th Century the Arabs admitted to using bows from horseback only very rarely and apparently ineffectually; while Seljuk organisation and tactics are based on early Arab sources and a 14th Century Mamluk source respectively, neither of which can be claimed to apply to the Seljuks in any way.

However, the fact remains that here we have the first book on an entirely new field and, errors aside, John Greer is to be congratulated on having presented his findings in an intelligent and informative style which is sure to prompt a great deal of further interest in this previously neglected subject.

German Artillery of World War Two, by Ian Hogg. Arms & Armour Press, 2-6 Hampstead High Street, London NW3. Price £7.95.

THIS MAMMOTH WORK has been eagerly awaited for some time by artillery enthusiasts and scholars, for it is a work that effectively fills a major gap in the records of World War 2. German artillery covered a very wide scope of weapon types and calibres and all are recorded in these pages. The book is divided into sections by weapon type, ie Infantry artillery, Mountain artillery, etc, and ending up with Recoilless Artillery. The text is not too technical and explains most of what the average reader will want to know and there are many illustrations. The more knowledgeable reader will note that many illustrations and much of the data in the text has been taken from post-war Intelligence summaries direct, but as few readers will have access to such documents, this should not deter anyone. Indeed it is pleasant to uncover data and facts regarding German artillery without having to wade through a mass of paper. Although most of the work deals with the 'standard' German guns, some mention is made of such odd items as the 15 cm Hochdruckpumpe and the electric guns, and indeed much new material has been uncovered on such items.

On the debit side, one can only regret such things as wrongly captioned pictures but there are only a few of these, and mistakes with captions are almost inevitable in

a book of this size. The appendix on captured gun designations should be treated with a great deal of caution as there are many omissions and mistakes, too numerous to list here. A fair portion of the pages of the book is devoted to ammunition, fuzes, ammunition markings, and the identification of German artillery cartridge cases. While the scholarship devoted to such subjects is no doubt well-meant, it is open to doubt whether the subject matter will be of much interest to the average reader who has to pay for its insertion, and will never have recourse to it.

But it is the major part of this book that is its strong point. It provides a handy readable reference to all the German guns, and there is little that has been left out or that one can quibble over. It is possible that many will disagree over the exact number of 80 cm K(E) guns that were built — Mr Hogg maintains his stand on only one while other records point to as many as three, but again, this is a minor point, far outweighed by the value of the book overall. It is well produced, well illustrated and not too expensive. In these days £7.95 is cheap for a book of this nature.

Railways

Steam, by Geoffrey Kitchenside. David & Charles, South Devon House, Newton Abbot, Devon. Price £3.95.

SUBTITLED 'Portraits of the Great Days of the British Steam Locomotive', this book is a photographic study, the work of many photographers, ranging from the 19th Century to the present day. British steam trains of all kinds are shown in their native settings, each with a short note on the locomotives and the type of lines operated. The photographs are predominantly of the later days of British Railways, and the locomotive types are mainly BR standard types and the later company designs.

For the modeller, the atmosphere of the settings is probably of more use than the pictures of the rolling stock or locomotives, though much of the atmosphere is obtained by the splendid plumes of smoke and steam on cold days and arduous banks. The large format photographs, generally one to a page, recapture a bygone era.

Famous Railway Photographers, by Derek Cross. David & Charles, South Devon House, Newton Abbot, Devon. Price £4.50.

BY WAY OF contrast, *Famous Railway Photographers* features the work of Derek Cross. Divided into four sections, this photo essay covers the Lancaster and Carlisle line, Southern 4-4-0s in Kent, Double-heading in Ayrshire and steam in New Zealand. Similar in format to the above book, each photograph is accompanied by a short note, and deals almost exclusively with the steam locomotive, the notable exception being a rare shot of the ill-fated English Electric gas-turbine locomotive GT 3 on Shap Fell. The cover of this book is in colour, a feature missing from the contents of both of these publications, although the price would no doubt have been even higher with full-colour plates. Again, for the modeller, the settings and overall condition of the trains are probably the most valuable part of the photographs.

LETTERS TO THE EDITOR

Russian Mustangs

MENTION WAS made of three P-51 Mustangs being supplied to the USSR during April 1942 (Army-Air Colours Part 7). During my researches on a series of forthcoming articles on 'Aircraft Supplied To The Soviets Under Lend Lease' to be published by the American Aviation Historical Society, in co-operation with project leader Mauno Salo, we have discovered that ten Mustangs from RAF batch AG345-AG664 were transhipped to the Russians, and pressed into service on the Finnish Front, being frequently encountered by the Finnish AF.

Below is a list of Finnish claims against the Mustang together with pilot's names: Myllymaki, 18/6/44; Heava, 23/6/44; Koskinummi, 28/6/44; Vahvelainen, 28/6/44; Laitinen, 4/7/44; and Karhila, 7/7/44.

Through your magazine I would like to appeal for any information, personal experiences, etc., concerning air ferry flights, convoys, photos, etc., on Aid to Russia 1941/46.

R. K. Lundie, 53 Swaines Way, Heathfield, Sussex.

Victorian Military Society

THE VICTORIAN Military Society held a meeting at the National Army Museum on Saturday March 13, at which Major Peter Walton RAOC gave a talk on British Army Organisation in 1837. The talk was illustrated by some examples of uniform for that date. Ian Knight, secretary of the Zulu War Study Group, exhibited some circa 1879 Zulu weapons and shield (on loan from the Brighton Museum) and members were able to ask difficult questions on detail, which Ian answered with ease, and get the 'feel' of the weapons. Ted Herbert, secretary of the Wargames Study Group, announced the society's first publication, *A Handbook for Colonial Wargamers*, would be printed in time for the next meeting, to be held at the National Army Museum at 2 pm on June 5. Information on the society may be obtained from the secretary: John

Crouch, 18 Tudor Court, Park Road, Teddington, Middx.

605 Squadron RAuxAF

CAN ANY READER assist me with reference to a project I am doing for the Midland Aircraft Preservation Society who will be opening the Midland Air Museum at Baginton Airport, Coventry, this year. I am trying to obtain photographs and information about No 605 Squadron, RAuxAF, and would particularly like to hear from ex-members of the squadron. I will, of course, answer all letters and pay for any photographs, etc.

M. Butler, 31 Arthur Street, Kenilworth, Warks CV8 2HF.

Glasgow wargames

THREE MORE Scottish wargames clubs, Bearsden, Dunfermline and Greenock, have joined Glasgow and Strathclyde's Scottish Wargames Promotions. Dunfermline will be holding an open day in May, while Wargame '76, the annual exhibition of Scottish military modelling and wargaming, will be held in Glasgow's McLellan Galleries on Saturday, June 19. For further information on either of these events please write, enclosing an SAE to the Secretary, Dale A. Bilsland, 35 Gleneagles Cottages, Scotstoun, Glasgow G14 9EY.

43 Squadron RAF

I AM TRYING to trace the history of No 43 Squadron RAF, and would be grateful to hear from anyone with any information. All material will be very carefully handled and, of course, returned after use.

Iain Sturrock, Gairnlea, 1 Invercauld Road, Balleter, Aberdeenshire AB3 5RP.

Military heraldry

MAY I CALL the attention of your readers to the Military Heraldry Society?

Contributions

Letters to the editor selected for publication entitle the senders to each receive a free Airfix plastic construction kit, and the publication of photographs from readers is similarly rewarded. Airfix Products Ltd award the kits on the following scale:

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Letters to the editor should be addressed to: the Editor, Airfix Magazine, Bar Hill, Cambridge, CB3 8EL. If a reply is wanted, a stamped addressed envelope (or International Reply Coupon) should be enclosed. All photographs submitted for consideration should be clearly labelled with the sender's name and address on the back of each.

Opinions expressed by correspondents on this page are their own and do not necessarily reflect the views of the Editor or Airfix Products Ltd.

The society was formed in 1951 for collectors and others interested in cloth formation signs to exchange information and material.

The scope of the society includes formation signs (shoulder sleeve insignia) shoulder titles, regimental and unit flashes and similar cloth items. Four Journals are published each year.

Those interested should write to the Publicity Officer for an application form: Lt Cdr W. M. Thornton RD, RNR, Publicity Officer, Military Heraldry Society, 37 Wolsey Close, Southall, Middx UB2 4NQ.

Belvoir militia

OSPREY PUBLISHING are staging a two-day militia event at Belvoir Castle on July 10-11 which will include archery displays, a parade of World War 2 AFVs, trade stands, competitions, etc. For further details contact Juliet Bonas, Osprey Publishing Ltd, 12-14 Long Acre, London WC2 9LP.

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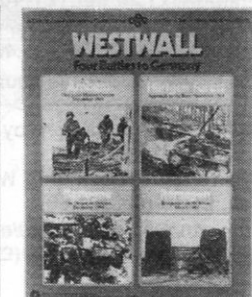
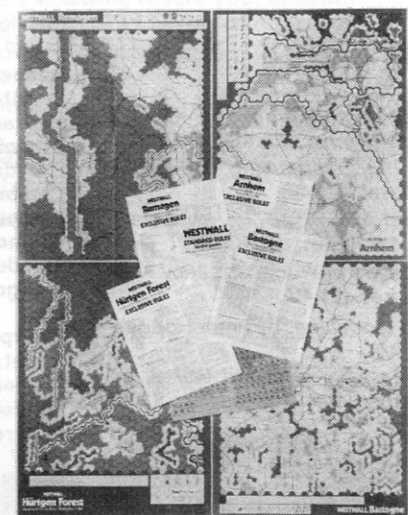
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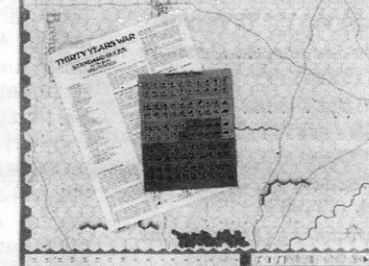
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R4 - River Section Straight

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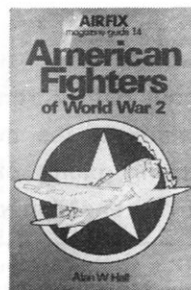
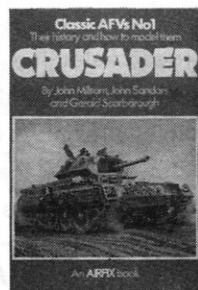
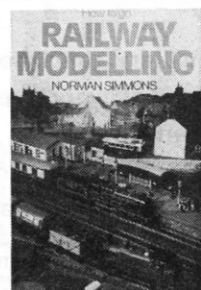
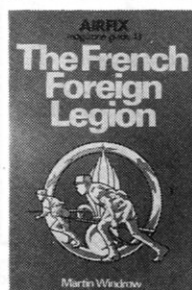
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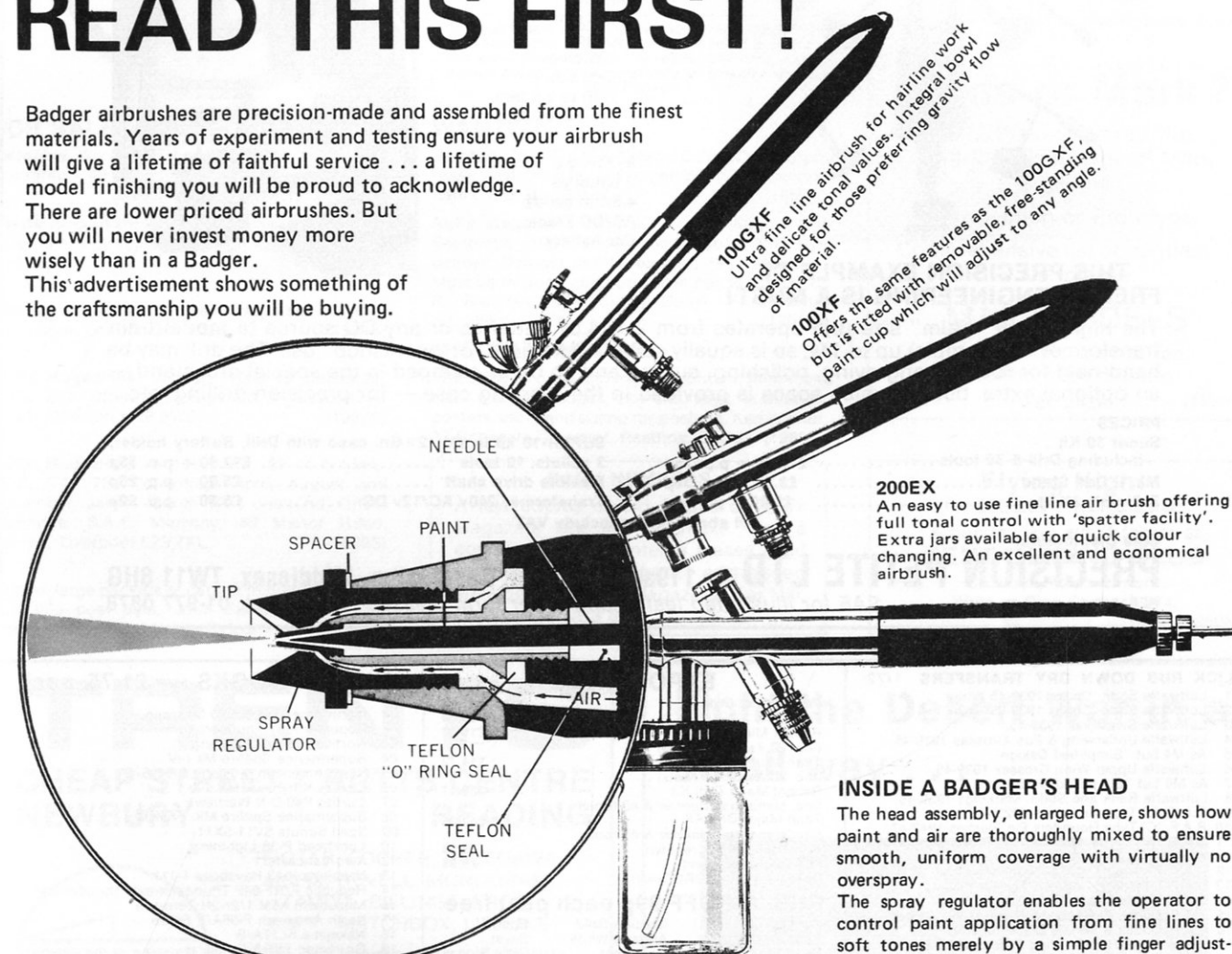
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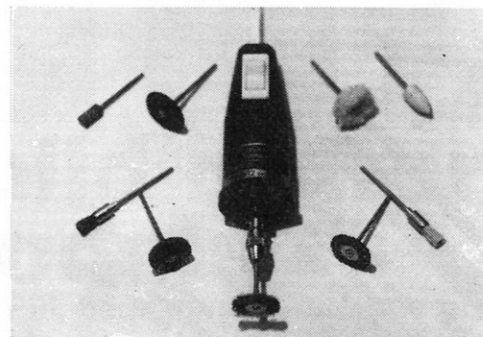
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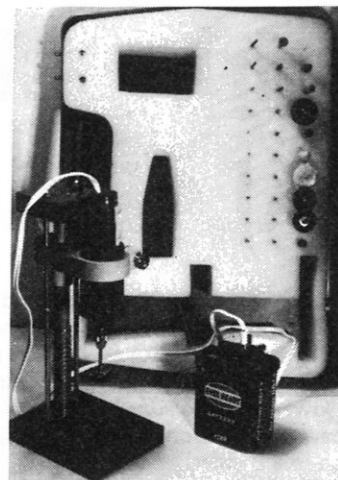
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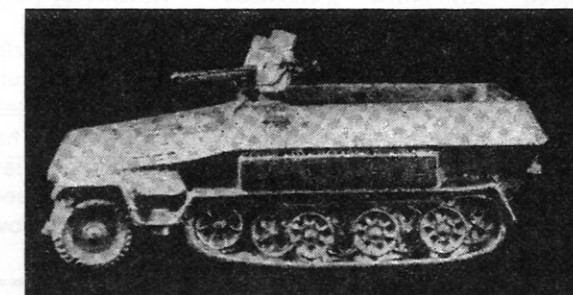


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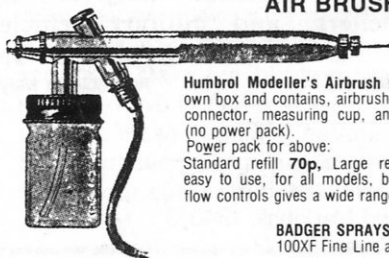


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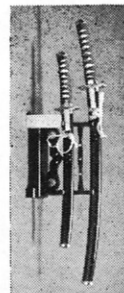
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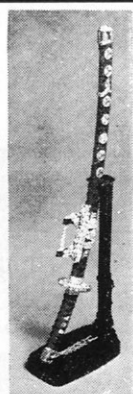
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